COMPARING ADHERENCE PATTERNSTO STANDARDPRECAUTIONS ANDINFECTION CONTROLAMONGST HEALTH CARE PROVIDERS IN PUBLIC AND PRIVATE HOSPITALSIN BOTSWANA

by

Dr Nebeyou Aberra Yilma

submitted in accordance with the requirements

for the degree of

MASTER OF PUBLIC HEALTH

in the subject

Health Studies

at the

UNIVERSITY OF SOUTH AFRICA

SUPERVISOR: Professor Peter Thomas Sandy

November 2013

DEDICATION

To Eden.

DECLARATION

I declare that **COMAPRING ADHERENCE PATTERNSTO STANDARDPRECAUTIONS WITH REGARD TO INFECTION CONTROL AMONGST HEALTH CARE PROVIDERS IN PUBLIC AND PRIVATE HOSPITALS IN GABORONE, BOTSWANA** is my own work and that the resources that I have used or quoted have been indicated and acknowledged by means of complete references and that this work has not been submitted before for any other degree at any other institution.

Dr Nebeyou Aberra Yilma		18/11/13
Full names	Signature	Date

ACKNOWLEDGMENTS

I would like to thank the Human Research Unit of the Ministry of Health of Botswana for allowing me to conduct this study.

I also want to thank the administrators of Princess Marina Hospital and Bokamoso Private Hospital for helping me in the conduction of the study in their respective Emergency Departments. My thanks go to the Health Care Workers of the Emergency Departments of the two hospitals for taking part of their precious time to fill in the self-administered questionnaires.

I would like to thank the Department of Health Higher Degrees Ethics Committee of the University of South Africa (UNISA) for giving me the due permission to go conduct this study.

Last but not the least, my heartfelt thanks go to Professor Peter Thomas Sandy who has been giving me invaluable suggestions and comments by revising this study from its proposal up to its final stage.

ABSTRACT

This study aimed to provide evidence on knowledge of attitudes toward standard precautions (SPs) and its practice of Healthcare Workers (HCWs) in government and private hospitals in Botswana. It utilised descriptive cross-sectional methodology. A range of significant findings were revealed. Good practice of SPs was noted more amongst the HCWs in government than in private hospitals. Knowledge of SPs amongst HCWs in government hospital was significantly and positively correlated to good practice of SPs. Registered Nurses (RNs) had better knowledge of SPs than HealthcareAssistants (HCAs).There was no significant difference between RNs and HCAs practice of SPS and attitudes toward the same. No significant difference in the knowledge, attitudes and practice of SPs was noted between General Practitioners (GPs) and RNs. No significant difference in the knowledge, attitudes and practice of SPs was observed between GPs and HCAs. The study findings have implications for the application of SPs in practice.

Key terms; Needle stick injury; Adherence pattern; Knowledge, attitude and practice towards standard precaution; Standard precaution; Universal precaution; Infection control; Infection prevention; Public and private hospital; Health care providers; Health care workers; Standard precaution practice pattern; Comparative descriptive cross-sectional study; Emergency department

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBRIVATIONS

AIDS	ACQUIRED IMMUNO-DEFICIENCY SYNDROME
BPH	BOKAMOSO PRIVATE HOSPITAL
ED	EMERGENCY DEPARTMENT
HBV	HEPATITIS B VIRUS
HCA	HEALTH CARE AUXILIARIES
HCW	HEALTH CARE WORKER
HCV	HEPATITIS C VIRUS
HIV	HUMAN IMMUNODEFICIENCY VIRUS (HIV),
IC	INFECTION CONTROL
IP	INCIDENCE AND PREVALENCE
MOH	MINISTRY OF HEALTH
NSSI	NEEDLE STICK AND SHARP INJURY
PMH	PRINCESS MARINA GOVERNMENT REFERRAL HOSPITAL
RNS	REGISTERED NURSES
SP	STANDARD PRECAUTION
UP	UNIVERSAL PRECAUTIONS

APPENDIX

CHAPTER 1: ORIENTATION TO THE STUDY

1.1 INTRODUCTION

According to Hofstee, the introductory section of a dissertation explains or orientates readers to what researchers` plan to do and why it is worth carrying out their plans (Hofstee 2006:83). It is also reported in the literature that introductions are elements of a dissertation that provide researchers with the framework necessary to articulate their study (Hofstee 2006:83).Taking this into account, it is critical at this stage of the dissertation to provide a brief explanation of the focus of this work, which is standard precaution. The brief explanation or account is followed by an overview of the dissertation to allow readers to follow and understand discussions or arguments on issues presented.

Standard Precautions (SPs) are infection prevention (IP) practices that can be applied to all patients in healthcare settings (CDC 2007:66). Examples of such practices include hand hygiene and use of gloves. Adoption of such approaches in clinical practice is believed to contribute to the prevention of transmission of infectious agents, such as HBV (Siegel et al 2007:66).This dissertation consists of a number of subsections or chapters, and a resume of each of these are now offered.

Chapter one sets the scene for discussion by providing a background to the study and a rationale for undertaking the same, including the research problem and significance of the study. The issues outlined in this are expanded on in chapter three. Chapter two is a review of the extant literature on standard precaution practices. It also includes a systematic account of the data search strategies used within the review. Chapter three is an elaboration or extension of chapter one. Simply, it includes discussions of the methodological and ethical issues of the study. Also included are discussions on quality issues of the study, in other words, its reliability and validity. Chapter four relates to the findings or results of the study. They are presented here and discussed using extant literature discussed in chapter two. The final section, chapter five offers a resume of the findings and an examination of their implications and recommendations for practice,

research and training. This chapter also includes concluding remarks relating to the entire research process.

1.2 BACKGROUND TO RESEARCH PROBLEM

Standard Precautions (SPs) include a group of infection prevention (IP) practices that are applicable to all patients, regardless of suspected or confirmed infection status, in any setting in which healthcare is delivered (CDC 2007:66). Examples of such practices include hand hygiene; use of gloves, gown, mask, eye protection and face shield (CDC 2007:66).SPs practices also include the safe handling of equipments or items in patients` environments that are contaminated and / or likely to have been contaminated with infectious body fluids (CDC 2007:66). These safe handling practices include wearing gloves during handling of heavily soiled equipment, cleaning and disinfecting or sterilising reusable equipments before use on other patients(Siegel et al 2007:66). This manner of SPs practices, in other words, safe handling are underpinned by the principle that all blood, body fluids, secretions, excretions (except sweat), non-intact skin and mucous membranes may contain transmissible infectious agents (CDC 2007:66). Arguably, application of this principle plays a role in the prevention of transmission of infectious agents,such as HBV. This is evident in clinical practice.

Although SPs may contribute to the prevention of transmission of infectious agents, the researcher believes that its practice tends to vary from health facility to health facility and from one health care worker (HCWs)to another. This variation of SPs practices among health personnel can be attributed to the differences in knowledge and attitudes toward the same. Other possible contributory factors to the variation in SPs practices include limited or adequate supply of, for example, gloves and goggles that may have a direct impact on this practice. It is critical to note that consistency in the supplies of these items does also influence SPs practices irrespective of the nature of healthcare settings, as they are implicated in a range of incidents like needle stick injuries.

Clinical practice has shown that HCWs and patients are at a high risk of needle stick and sharp injuries (NSSIs) ifSPs practices are not adhered to. Outcomes of studies by Wicker et al (2008a:347-354) and Mehta et al (2010:17-20) supported this view. These authors reported that HCWs can contract infections, such as human immunodeficiency virus (HIV), hepatitis B virus (HBV) and hepatitis C virus (HCV) in instances where SPs are inconsistently applied. They also claimed that such infections can potentially occur among HCWs if they have limited knowledge of SPs or lack of it. Similar outcomes are reported in other studies. Taking for example the study by Karadag (2010:129)of nursing and midwifery students on SPs in Turkey, it is claimed that a significant proportion of these HCWs, say over 70%,reported to have experienced a needle stick and sharp injury(NSSI).This study emphasized on the need for HCWs to frequently review preventive measures to strengthen adherence to SPs. It is claimed in the same study that engaging in such reviews would minimize the incidence of NSSIs that will subsequently reduce the risk of contracting or transmitting communicable infections (Karadag 2010:128).It is therefore critical to explore adherence of HCWs to SPs. Doing so would result in the development of strategies for promoting or enhancing its practice with the view of reducing the risk of contracting infections by HCWs and the patients they are treating and caring for.

1.3 RESEARCH PROBLEM

Sub-Saharan Africa bears the brunt of the Human Immunodeficiency Virus(HIV) and or Acquired Immuno-Deficiency Syndrome (AIDS) burden of the world (Kironde and Lukwago 2009:127). This region makes 9% of the world population and carries two thirds of the total HIV burden of the world (WHO 2007:3). Botswana is one of the countries in the Sub-Sahara Africa region with very high incidence and prevalence of HIV and AIDS(WHO 2007:4). It is reported in the literature that Botswana has an approximately 18% national prevalence of HIV (MOH Botswana 2012:1).Such high prevalence of HIV is attributable to a range of factors, including mother to child transmission and unsafe sexual practices, such as unprotected sexual intercourse(Wiener, Battles and Wood 2007:473; MOH Botswana 2012:88). Poor SPs practices are also claimed to play a part in the growing rate of HIV and AIDS in Botswana. From the clinical experiences of the author of this work and reports

noted in the literature, non-adherence or limited adherence to SPs practices do generally contributed to rising incidence of infections (Karadag 2010:128).

Other examples of infections noted in Botswana, with rising incidences observed in clinical practice are hepatitis B and hepatitis C (Patel et al 2011:390). Again, the growth in incidence of these infections can also be attributed or at least in part to poor SPs practices, a view supported by Patel et al (2011:390).

HCWs are generally involved in the care and treatment of people, including those living with HIV as well as those infected with HBV and other infectious agents. Since this is the case, there is an apparent high risk of transmission of blood born infections to HCWs. If SPs are not properly followed, the risk of acquisition or transmission of HIV, HBV as well as other transmissible infections is expected to increase in health facilities amongst HCWs as well as patients. This is a concern that requires addressing which is believed would help prevent or at least reduce the transmission or acquisition of infections. One approach that would contribute in addressing this concern is to evaluate or assess the practice of SPs, with particularly emphasis on the consistency in its application by HCWs.

Few studies have been done in Botswana to assess adherence patterns to SPs in private and public hospitals. It is therefore not surprising to note the difficulties experienced by HCWs in designing effective SP measures. Such difficult is a function of limited understanding of SPs. This difficulty and associated limited understanding are calls for HCWs in Botswana to engage in research that relates to SPs. Doing so would not lead to enhanced understanding of SPs, but it will also improve the quality of its application in practice.This study is one of the few that explores adherence to SPs in Botswana. Specifically, it examines the practice of SPs, including factors promoting and hindering adherence to this practice. Added to this, it also examines reasons or explanations for inconsistencies in the practice of SPs.

1.4 AIM OF THE STUDY

1.4.1 Research purpose and aim

Botswana is a highly HIV prevalent society. Hence, the absence of infection prevention strategy is likely to increase the risk of acquisition or transmission of HIV, HBV and other transmissible infections amongst HCWs and patients in health facilities. This study therefore has two separate but inter-related aims. Firstly, the study aims to examine adherence patterns of SPs practices among HCWs working in private and public hospitals in Gaborone, Botswana. The private and public hospitals are Princess Marina Government Referral Hospital (PMH) and Bokamoso Private Hospital (BPH) respectively. Secondly, the study aims to utilise its findings to enable policy makers to develop guidelines for enhancing SPs practices of HCWs.

1.4.2Research objectives

The aim of any research relates to specific targets researchers intend accomplish by engaging or conducting a study (Polit and Beck 2008:73). The research objectives on the other hand are clear statements of steps that researchers have to take to achieve the aim of astudy (Burns and Grove 2008: 165). The specific objectives which guided this study are listed below:

- To assess and compare the knowledge and practice of SPs, and attitudes toward SPs practices among HCWs in PMH and BPH
- To explore the relationship between level of training of HCWs and adherence to SPs
- To explore the relationship between attitudes of HCWs toward SPs practices and adherence to the same.
- To explore HCWs` reasons or explanations for their level or degree of adherence.

- To identify and explore and examine factors that may influence HCWs` adherence to SPs.

1.5 DEFINITIONS OF KEYTERMS AND OPERATIONALISATION

1.5.1 Knowledge

This refers to information, understanding and skill that people gain through education and / or experience (Oxford Advanced Learner's Dictionary 2005:854). This explanation is adopted in this study.

1.5.2 Attitude

Is the way an individual thinks and feels about somebody or something. It is relates to the way individual behave towards somebody or something that shows how that person thinks and feels about the same (Oxford Advanced Learner's Dictionary 2005:85). For this study, an attitude is taken as a hypothetical construct that represents an individual's degree of likes (favourable evaluative reaction) or dislikes (unfavourable evaluative reaction) for an item, or person (Taylor, Peplau and Sears 2003:124).

1.5.3 Practice

This refers to the way of doing something that is the usual or expected in a particular organization or situation (Oxford Advanced Learner's Dictionary 2005:1181). This is the definition that is adopted in this study.

1.5.4 Adherence

This is about the fact of behaving according to a particular rule or expectation. In other words, it is about following a particular set of beliefs or fixed ways of doing something (Oxford Advanced Learner's Dictionary 2005:18). This is the approach incorporated in this study.

1.5.5Standard

This relates to the level of quality that is normal or acceptable for a particular person or in a particular situation (Oxford Advanced Learner's Dictionary 2005:1492). For this study, HCWs are expected to follow specific approaches of SPs, which are in essence the standards expected.

1.5.6 Precaution

These are actions, steps or something that done in advance in order to prevent problems, avoid dangers or untoward incidents (Oxford Advanced Learner's Dictionary 2005:1183). In this study, this relates to steps HCWs take to prevent them and the patients they care for from contracting infectious agents.

SPs include a group of infection prevention practices that include, for example, hand hygiene, use of gloves and gown (Siegel et al 2007:66).These practices are based on the principle that all blood, body fluids, secretions, excretions (except sweat), non-intact skin, and mucous membranes may contain transmissible infectious agents (Siegel et al 2007:66).

1.5.SIGNIFICANCE OF THE STUDY

HCWs are generally involved in the care and treatment of people infected with HBV and other infectious agents, such as HIV. The findings of this study have enhanced understanding of SPs and adherence to the same. This understanding may contribute to lower the rate of transmission of blood born infections to HCWs during care provision. The findings also led the researcher to offer recommendations to the Ministry of Health and managers in the two studied hospitals to develop guidelines for enhancing the quality of SPs. The intention for the development of guidelines is to promote consistency in SPs practices as well as adherence to the same. Adhering to SPs practices would enable HCWs to avoid risky practices or behaviours that may result in them and patients contracting infections or at least reducing the chances of this occurring. In sum, the

guidelines will help to reduce the incidence and prevalence of blood born infections among health professionals and their patients.

1.7 THEORETICAL FOUNDATIONS OF THE STUDY

1.7.1 Research paradigm

A paradigm is a world view (Polit and Beck 2008:14). In scientific research, disciplined inquiry is conducted within two paradigms, positivist and naturalistic. These paradigms are in essence associated with quantitative and qualitative methodologies respectively. Positivist paradigm is used in this research to examine adherence patterns of SP in two urban hospitals in order to gain more insight into this phenomenon. Positivists believe that phenomena are not haphazard or random events, but rather have antecedents(Polit and Beck 2008:15). In relation to this study, it is claimed that this paradigm fits greatly with the ontological and epistemological assumptions of its researcher. Variation in adherence to SPs was a result of relatively measureable variables like knowledge, attitudes and practice patterns of ED staff. The researcher conducted statistical analysis of the findings. In doing this, all necessary steps were taken to maintain objectivity. In other words, a cautious approach was taken to prevent preconceptions from affecting or influencing the analytical process and its outcome (Polit and Beck 2008:15). Thus, the philosophical foundation of this research lies in establishing objectively quantifiable and comparable relationships between knowledge, attitudes and practice patterns of ED staff towards adherence to SPs.

1.7.2 Theoretical framework

The 2007 CDC SP guidelines are expected to help HCWs to follow the basic principles of IP through hand washing, utilization of appropriate protective barriers, such as gloves, mask, gown and eyewear with the view of reducing the risk of transmission of infections (Siegel et al 2007:16). Theoretically, it is assumed that adhering to infection prevention (IP) procedures would minimize or prevent the risk of transmission of potentially transmissible infections to patients and HCWs. These assumptions and the various findings in the literatures reviewed were used to structure the focus of this study. The concepts that form

the basis of the theory of this study include knowledge, attitudes, and practice patterns of ED staff toward SPs. These variables have a directional relationship to IP, meaning good knowledge of SP principles contributes to positive attitude and good practice of IP measures. This serves as part of the theoretical framework that underpins this study that explored variables on adherence patterns to SPs of HCWs. Figure 1.1 below illustrates the theoretical framework of the study.

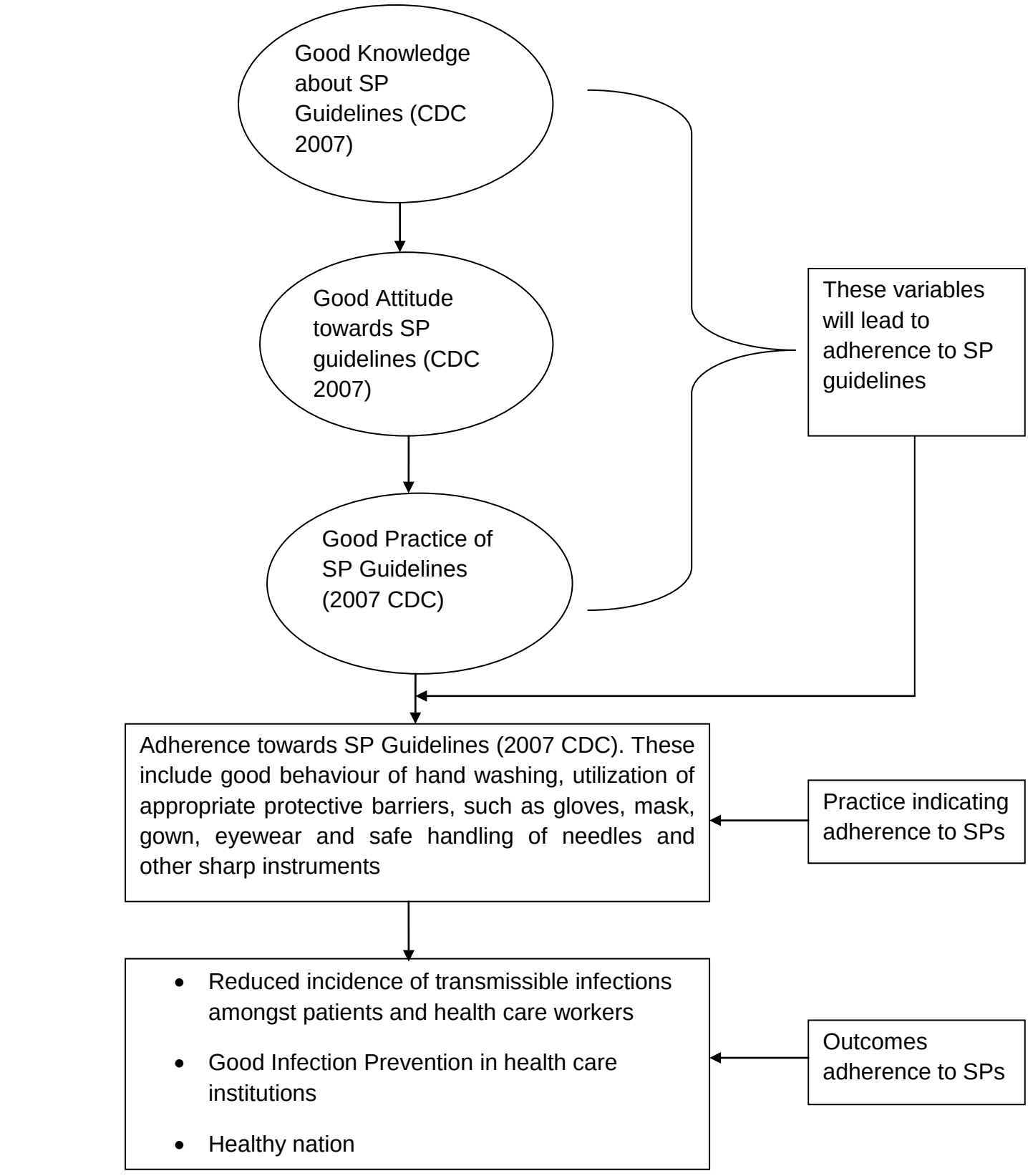

Figure 1.1: Depicts the theoretical framework of the study

1.8 RESEARCH DESIGN AND METHOD

1.8.1 Researchdesign

A non-experimental descriptive quantitative study design with a cross-sectional dimension has been used to assess adherence to SPs of the HCWs in two hospitals in Gaborone, Botswana. A research design is a plan detailing how a research will be conducted. It guides the researcher in planning for and implementing the study (Babbie *et al* 2011:647). The different elements of the design to be used in this study are discussed below.

1.8.2 Descriptive element

The study will take the form of a quantitative descriptive non-experimental study. Polit and Beck (2004:716) define quantitative descriptive design as research studies that have as their main objective the accurate portrayal of the characteristics of persons, situations or groups and / or the frequency with which certain phenomena occur. Non-experimental research refers to a study in which the researcher collects data without introducing an intervention (Polit and Beck 2004:725).Woodward (2005:12) states that, in quantitative descriptive design, the researcher only collects data to give a clear picture of a situation. In this study, the researcher aimed to collect data to examine adherence patterns of respondents.

1.8.3 Cross-sectional element

Hulley et al (2007:109) state that a cross-sectional element of a design is the scientific study in which data is collected at one point in time with no follow-up period. It is suited for the goal of describing situations. In other words, the phenomena under study are captured during one period of data collection and they are appropriate for describing the status of phenomena or for describing relationships among phenomena at a fixed point in time (Polit and Beck 2008:206-208). These phenomena were knowledge, attitudes and adherence patterns of respondents in this study. Woodward (2005:26) stated that cross sectional

studies are most useful for description and researchers can collect just what they want and can link data to individual respondents.

Cross sectional studies are often important first steps in assessing the possibility of a relationship between an exposure and a disease, before more costly or difficult case-control or cohort studies are undertaken (Joubert and Ehrlich2007:87). The advantage of using this type of element within this type of study design is that it is relatively easy, economical and not time consuming compared to case-control or cohort studies. The cross sectional element of this study design helped the researcher gather the data which helped in attaining the objectives set. This design also assisted in assessing and exploring at a point in time ED staff's knowledge, attitudes and behaviours in relation to adherence patterns to SPs. In addition, it helped to offer explanations to some of the queries in the research problem, like the reasons for inconsistent adherence to SPs amongst HCWs. It also enabled the researcher to explore the nature of difficulties, in other words barriers to adherence to SPs practices in Botswana.

1.8.2 RESEARCH METHODS

1.8.2.1 Population and sample

The population universum for this study comprised of HCWsof all hospitals, private and public in Botswana. Princess Marina and Bokamoso hospitals were conveniently identified as the target sites of this study. Princess Marina is one of the three government referral hospitals in Botswana. Bokamoso Private Hospital is one of the state of the art private hospitals in Botswana. The hospitals are tertiary level services giving tertiary care treatment. These characteristics make them convenient for comparison. One of the hospitals is managed by the government and the other privately owned. Again, this allows the researcher to make comparisons of adherence to SPs in these two settings. All HCWs in the emergency departments of these hospitals were identified as the target population of this study. The target population is a subset of the population universum. It is a group about whom the researcher wanted to know more about and from whom the sample was drawn. HCWs in the emergency departments of the chosen hospitals formed the target

population, and HCWs who met the inclusion criteria were conveniently recruited from this population. The accessible respondents constitute the accessible population. The accessible population is the portion of the target population to which the researcher has reasonable access (Johnson and Christensen 2010:257). It is also the population to which the researcher can apply their conclusions. The respondents in both hospitals lived in the capital city, Gaborone, meaning they were in the same environment. Convenient sampling entails using the most conveniently available people as study respondents (Polit and Beck 2008:341). Data was collected from the staff using a structured self-administered questionnaire. The sample size of HCWs utilised in the study selected from Princess Marina and Bokamoso hospitals were 39 and 35 respectively. This means a total of 74 HCWs participated in the study.

1.8.2.2 Eligibility criteria

Inclusion criteria – HCWs who were working in the ED of the two hospitals, who fulfilled the following criteria, were included in the study:

I. General Doctors and Specialist Doctors with 1 or more than1 year of hospital or clinic practice
II. Registered nurses (RNs) with 1 or more than 1 year of hospital or clinic practice
III. Health Care Auxiliaries (HCAs) with 1 or more than 1 year of hospital or clinic practice
IV. Other full time HCWs in clinical or hospital practice whose job involves physical handling of patients or their blood or bodily fluids
V. HCWs who read and understand English

Exclusion criteria - people who were working in the ED of the two hospitals, who metthe following criteria, were excluded from the study:

I. Non health professionals
II. Healthcare medical and nursing students
III. General Doctors and Specialist Doctors with less than1 year of hospital or clinic practice and/or those in part time practice

IV. Registered nurses (RNs) with less than 1 year of hospital or clinic practice and/or those in part time practice
V. Health Care Auxiliaries (HCAs) with less than 1 year of hospital or clinic practice and/or those in part time practice
VI. Other part time healthcare workers in clinical or hospital practice whose job involves physical handling of patients or their blood or bodily fluids
VII. HCWs who cannot read and understand English

1.9 SCOPE AND LIMITATIONS OF THE STUDY

This descriptive cross-sectional study was restricted to the emergency departments (EDs) of two study sites, Princess Marina and Bokamoso hospitals. Acute medical cases that may need urgent attentions are usually found in emergency departments of hospitals relative to other departments. Acuity of cases are expected to have an impact on how health care workers` SPs practices in emergency departments. This study was carried out in the emergency departments of the two hospitals (study sites) in Botswana out of the many hospitals that existed there. The findings of the study may therefore not be generalizable to the wider population of EDs healthcare workers who practice SPs. However, the study findings indicate what to expect in the context of SPs in other settings as HCWs are somehow similar to those that work in the EDs of hospitals where the study was conducted.

1.10 CONCLUSION

This chapter one has set the scene for discussion as it has offered discussions on the background to the study, research problem and significance of the study. Chapter two discusses or covers the literature review conducted for the study.

CHAPTER 2: LITERATURE REVIEW

2.1INTRODUCTION

This chapter is a literature review of the extant literature on SPs and its practice. The purpose of a literature review is to demonstrate to the reader that one has a good grasp of the main published work concerning a particular topic or question in the identified field. Thus, it is important to note that the review should not just be a description of what other people have published, but a critical discussion that presents insight and an awareness of the different arguments, approaches and theories (Taylor 2006:234).To achieve this vision in a sound manner, a systematic approach is required to thoroughly search and explore all the sources of literature (Parahoo 2006:342). So, knowledge on the strength or quality of literature sources is implicated in this process.

2.2HIERARCHY OF EVIDENCE AND TRIANGULATION ISSUES CONSIDERED

There has been an ongoing uncertainty about which methodological (qualitative or quantitative) approach is most suitable for exploring health care issues, with discussions in the context mainly focusing on validity and reliability (Polit and Beck 2004:342). Historically, researchers have perceived ‘scientific methods’ of research to consist of only quantitative research, because it is founded on a systematic and objective process, deemed to provide a more sound knowledge-base to guide clinical practice than qualitative research (Burns and Grove 2003:234).

Advocates of qualitative research sustain that qualitative research is more effective for enhancing our understanding of human experiences; especially as it concentrates on discovery and understanding of the whole, a method that is in keeping with the holistic philosophy of nursing and healthcare (Smith 1996:8).Researchers who support qualitative methodologies believe that the ‘truth’ is complex as well as dynamic and can be discovered only by studying people as they interact within their social setting (Munhall and Oiler-Boyd, 1999:123). Qualitative work is praised for this close relationship between the researcher and participant, as the interactive relationship is perceived as being beneficial, for it allows the researcher to have first hand insights into the experiences of participants. Polit and

Beck 2004:342 maintain that qualitative approaches can be just as rigorous as quantitative methods. They suggest that there are measures the researcher can take to minimise bias in the data collection, interpretation and presentation of findings in order to achieve credibility. Clarke (2004: 41-44) and Silverman (2004:234) point out that consistent application and close adherence to standardised, qualitative data analysis procedures offer just as much clarity to the researcher as do quantitative analyses methods. In spite of the continuing debate about which approach most contributes to knowledge, there is a wider agreement that both approaches complement each other as they generate differing knowledge that is useful in clinical practice (Burns and Grove 2003:232).

Whilst considering the viewpoints presented thus far, it is the researcher's asserted view that exclusive dependence on either qualitative or quantitative methods of research would be inappropriate for the current quest for understanding the SPs practices. Both qualitative and quantitative paradigms have strengths and limitations. Thus, using them in this review could result in the weaknesses of one approach being balanced by the strengths of the other. Guba (1990:102) agrees with this summation and view it as the primary reason why dependence on mixed methodologies offers the most notable benefits for the human sciences, as each method serves to complement the other. Thus, the data search process of this review took account of literature from both qualitative and quantitative research sources.

2.3 DATA SEARCH STRATEGY

In this study the term literature search strategy refers to the procedures used to identify and explore contemporary literature relevant to the research problem (Polit and Beck 2008:342). It therefore makes sense for the literature search strategy of this study to commence with the identification of data sources that would illicit relevant literature. Initially, the University library was used to search for books and journals that are related to the subject under review; SP practices. The initial hard-copy library search did not reveal many current sources. However, the use of libraries is seen as an excellent starting point as it allows the gathering of information and access to alternative sources (Cormack 2006:234). So, electronic databases were searched to offer a wider range of literature. Conn et al (2003: 330-9) emphasize the importance of the reviewer possessing the skills

necessary to perform a comprehensive search of the available literature. Before engaging upon the searches of electronic sources, a set of keywords or search terms was decided upon. The following search terms were used:- “standard precautions”, “universal precautions, “infection control” “infection prevention”, “health care workers” “health facilities” and “health care facilities”. Each of the search terms were initially used individually, and then combined using Boolean operators AND, and OR. The use of Boolean operators allows a wider exploratory search of the literature (Wood, 1999). Primary focus was on searching various electronic databases. The Ovid, BNI (British Nursing Index), CINAHL, MEDLINE, PsycINFO and the Cochrane databases were utilized. By using the ATHENS software available online from the University it was possible to access all the above identified databases.

Initial search, using sentences related to the subject, identified over 200 thousand hits. However, by applying a number of more subject-specific terms, such as “infection control” “infection prevention”, significantly reduced the search results to 100 citations. Application of other parameters, such as ‘primary research’ and ‘English’, also led to an enormous reduction in the potential references of interest to 40. It must be noted that not all of the 40indentified references were found to be relevant to the studied subject. This conclusion was reached when inclusion and exclusion criteria, listed below, were applied to the literature obtained for review.

2.3.1Literature review: Inclusion criteria

- Studies and systematic reviews which explored SPs practices in emergency departments
- Studies which explored adherence to SPs
- Studies that relates to the impact of non-adherence to SPs.
- Studies published in English.

2.3.2Literature review: Exclusion criteria:

- Studies and systematic reviews which explored other issues other than SPs practices in emergency departments
- Studies which explored SPs in other areas of healthcare other than emergency departments
- Studies on SPs published in other languages other than English.

After applying each of the above criteria, only 20 articles met the criteria for inclusion in the review. All the papers selected were critically examination. The process of reviewing each study is based on established and validated models of critical appraisal, such as those offered by Depoy and Gitlin (1995:220), Polit and Beck 2004:342and Lincoln and Guba (1985:132) framework of trustworthiness. The decision to use a combination of frameworks is in keeping with guidance from Silverman (2004:234). He stipulated that different or a mixture of appraisal frameworks must be used for appraising qualitative and quantitative research sources, as these literature sources are inherently different in terms of the quality of evidence they can offer. Although not wholly similar, each of these appraisal frameworks focuses on exploring a combination of methodological issues and the contribution each literary source made to the body of knowledge. In essence, the review of individual studies was weighted on the knowledge contribution made to current understanding of SPs practice. To be more specific, the studies were evaluated in terms of their rigour, validity, reliability, dependability and transferability to the practice context (Polit and Beck 2008:232). Additional factors explored within the review process included the researcher`s apparent clarity in their formulation of the study question(s), whether or not the methods of data collection adopted were scientifically sound and appropriate to the issue under investigation. Further attention was given to the handling of data within each of the reviewed sources, including how well researchers addressed potential limitations of their studies. Several themes emerged during the execution of this review.

2.4EMERGENT THEMES

Many themes emerged from the analysis of the research papers. Each of the emergent themes is listed below.

- Knowledge of, and adherence to, SPs practice
- Incidence prevalence of infections
- Adherence to SPs
- Reasons for non-adherence to SPs practice
- Needles stick and sharp injuries: incidence and prevalence

2.4.1Knowledge of, and adherence to, SPs practice

This is one of the themes that emerged from the literature reviewed. Its presence is clearly depicted in a study of SPs conducted by Parmeggiani et al (2010:1471-2334).This was a cross-sectional study conducted in emergency departments of eight randomly selected hospitals in Italy that explored HCWs' knowledge and attitudes associated with transmission of infections. It was noted that the majority of the HCWs (87.9%) were aware that they can contract Hepatitis C Virus and HIV from patients. These HCWs were also fully aware of the risks associated with contracting these infections from patients and thus adhered to SPs practices. HCWs` awareness or knowledge of infections in healthcare practice was reported to be acquired from educational courses they attended and reading scientific journals. Whilst this was the case, a significant proportion of HCWs (85.3%) expressed the need for regular update on infections (such as HIV and Hepatitis C) and how transmission of these can be prevented or at least minimized through SPs practices. It was therefore not surprising to note in Parmeggiani et al`s (2010:1471-2334)study that approximately 95% of HCWs supported the need to adhere to guidelines for preventing HAIs, which include hand hygiene practices. About 90% believed that hand hygiene practices after every patient encounter do reduce therisk of infection transmission. Added to this, was the issue which relates to the use of gloves. A total of 81% of respondents always use gloves and performed hand hygiene measures after removing the same. This practice was reported to be frequent among HCWs with fewer patients to take care of, knowledge of hands hygiene and years of experience of SPs.

In sum, the Italian study indicates that HCWs with good knowledge of the risks of contracting infections were more likely to have positive attitudes toward infection prevention measures, and hence, more likely to adhere to SPs practices. Adherence to SPs practice was also noted to be associated with years of experience of infection control and prevention. Adherence to SPs practice reduces the incidence and prevalence of infections among HCWs and their patients.

2.4.2 Incidence and prevalence of infections

Limited or lack of adherence to SPs practices can result in HCWs and patients contracting infections. Wicker et al`s (2008b: 615-622) retrospective analysis of the risk of blood-borne infections among HCWs following an NSSI at Johann Wolfgang Goethe University Hospital in Frankfurt, Germany, is an attempt to illustrate this. The study included 13358 blood samples from patients of varied clinical settings, such as dermatology and gynecology. These samples were tested for HBV, HCV and HIV. Blood samples were also obtained from 1342 HCWs and tested for the same variables. With regard to patients, a prevalence of 5.3%, 5.8% and 4.1% HBV, HCV and HIV respectively was observed. The results of this study further indicate that HCWs, especially in an urban university environment, face significant occupational risks through their exposure to HIV, HBV or HCV. It is thus critical for HCWs to adhere to SPs practices.

2.4.3 Adherence to SPs

Wicker et al (2008b:615-622) survey underlined the importance of regular and consistent application of preventive measures, such as HBV vaccinations and use of safety devices (e.g. gloves) to prevent or minimize HCWs from contracting infections in the work place. Such an approach generally helps to promote the health and safety of HCWs. What is also needed to ensure consistency in the application of SPs practices that in turn would promote the health and safety of HCWs is, the availability of an occupational health policy. The development of such policy may ensure appropriate waste and sharp disposal, and reporting of all exposures. Sometimes, HCWs may be infected, for example with HBV through accidental needle injuries. In such instances, provision of psychological support is

needed to reduce the impact this may have on them. Now that the value of policies for SPs practice has been briefly discussed, it is time to turn to related discussions on the reasons for non-adherence

2.4.4 Reasons for non-adherence to SPs practice

Across-sectional quantitative study was conducted by Uti et al (2009:606) on dentists in Nigeria in 2009. Data was collected through self-administered questionnaires. It was found that 78.0% correctly stated that HBV is more infectious than HIV and 76.4% agreed that infection control (IC) procedures for HBV were adequate for the control of HIV. The same study found that most dentists (n=233, 93.2%) wore gloves routinely while treating patients and only 34(13.6%) routinely asked about their patient's HIV status. There was no significant association between use of gloves and age (p=0.66), type of practice (p=0.931) and years of practice (p=0.523). There was a significant association between use of gloves and willingness to treat HIV-positive patients. Dentists who wore gloves routinely were more willing to treat HIV-positive patients (p=0.031). The majority of dentists (56.8%) reported various barriers to glove use. Non-availability of gloves was the most commonly reported barrier to glove use (52.11%). Non-availability of gloves was significantly associated with type of practice; private, military or government practice. The teaching hospitals and general hospital had the highest proportions of dentists who reported non-availability of gloves, while the federal dental center, private hospitals and military hospital had the highest proportions of dentists who had gloves available to them. Other reasons for non-adherence were allergy (28.17%); loss of tactile sensation (26.7%); discomfort and difficulty in manipulation of instruments (21.13%); and cost (20.4%). This Nigerian study is somehow comparable to our study since it also tries to compare the compliance patterns of HCWs in different hospitals; private, government, military as well as teaching and general hospitals.

Questionnaire-based study by Chacko and Isaac (2007:127) to determine the incidence of per-cutaneous injury among medical interns in a tertiary care hospital in Punjab, India was done. It was found that of the 38 interns, 31(81.6%) experienced a lot of anxiety with regard to their occupational risk of contracting HIV. 23(60.5%) felt that there availability of

materials in the wards to take UPs was problematic.17 (44.7%) of respondents felt they were not well informed about what to do in case of an occupational exposure to HIV. Lack of time, lack of materials and emergency situations were the major reasons why UPs were not taken at times. Not doing adopting UPs may lead to poor infection prevention.

The researcher of this study thinks that institutional factors like inconsistent supply of IP materials and suboptimal training of HCWs about SPs may contribute to poor adherence to SP. We should not forget that level of training about SPs has a great impact on compliance. By having consistent supply of IP materials and by having well trained HCWs when it comes to SPs, it is the researcher's belief that work dissatisfaction and stigma towards patients with HIV related illness can be minimized.

2.4.5Needles stick and sharp injuries: incidence and prevalence

In five randomly selected government hospitals in Kabul, Afghanistan, a survey was conducted by Salehi and Garner (2010:1471-2334) using questionnaires to assess the occupational injury history and UP awareness amongst the staff. Respondents were nurses, internists, pediatricians, surgeons, midwives, dentists, gynecologists, obstetricians, and technicians. Sharp injuries in the last 12 months were reported in 72.6 % (491) of the 676 respondents of the study. It is important to state that 72.6%, in other words, 491 of 676 respondents had direct blood and fluid contact. Multiple injuries were common, with 34% (167) respondents reported more than 3 injuries. Rates of needle-stick and sharp-injuries (NSSI) ranged from 96.1% in gynecologists or obstetricians to 47.5% in internists or pediatricians. Health care staffs that who were aged 50 years and above hardly reported NSSIs. Generally, a total of 780 injuries were reported by respondents of the study. Of these 361(46.3%) were caused by needles, whilst 206 (26.4%) and 149(19.1%) of the injuries were attributable to glass and other sharps respectively. It is important to stress that re-capping a needle was responsible for 24.5% of all injuries reported by HCWs. It is interesting to note in the study that 13.2% of NSSI of HCWs was self-inflicted, whilst 12.4% of them were accidentally caused by their colleagues during surgical interventions. In relation to whether UPs were important and necessary approaches in all healthcare procedures, only half of the respondents (50%) supported this view, whilst the other half of

respondents believe that these approaches (universal precautions) are only applicable to HIV and Hepatitis.

In the above study in Kabul, despite the high incidence of NSSIs amongst the HCWs, only half of them supported the view that UPs should be followed in all healthcare procedures. It is the researcher's belief that there may be knowledge and/or attitude gaps in these staff groups in terms of SPs measures. Such gaps would lead to non-adherence to SPs.

Mehta et al (2010:17-20)conducted a 4-year (2004-2007) study on interventions to reduce NSSIs at a 351bedded tertiary health-care Hospital and Medical Research Center in Mumbai, India. In this Indian study, 342 HCWs sustained NSSIs. Of the 342 injuries, 254 were from known sources and 88 from unknown sources. None of the HCWs exposed to a positive source was positive at baseline for HBV/HCV/HIV. From the known sources, 37 were sero-positive; 13 for HIV, 15 for HCV, 9 for HBV. 66 NSSIs were sustained through garbage bags, 43 during IV line administration, 41 during injection administration, 35 during needle recapping, 32 during blood collection, 27 during blood glucose monitoring, 24 from theater instruments, 17 during needle disposal, 16 while using surgical blade and 7 during suturing and 34 from miscellaneous sources. All occupational exposure to blood and body fluids are managed as per the hospital guidelines. If the source was HBsAg positive, HCWs were given Hepatitis B immunization booster. If the HCW was anti-HBsAg negative, both Hepatitis B immunoglobulin (HBIG) and Hepatitis B vaccine were administered. For HCWs who sustained injuries from HIV-positive sources, antiretroviral therapy was started.

Karadag (2010:129) conducted a survey on Turkish nursing and midwifery students on their use of UPs during their clinical practice placement in a hospital. The outcome of the study revealed that 35.5% of the participating students had experienced a NSSI, 54% of the students had received one NSSI, and 36.0% had two NSSIs. 66% of the injured students had been injured by an ampoule and the majority of injuries occurred in the treatment room. Most of the students had washed their injury with antiseptic solution and 84% had not told anyone about the injury. While 86.5% of the students threw away used needles in the special sharps containers disposal box, 89.4% also stated that they always recap needles. The study found that a significant percentage of the nursing and midwifery

students receive NSSIs and concluded that it is important to frequently review information about preventive measures so that the students practice them during clinical practice every semester. It also recommended that instructors should monitor if the students are taking the necessary preventive measures. This study indicates that the high incidence of NSSIs was possibly as a result of recapping and ampoule injuries. The respondents of the study were nursing and midwifery students. So it should be stressed that SPs practice behaviour should start in schools since some patterns of behaviours can be resistant to change after the school years are over.

A study was conducted in September 2003 in Abeakuta metropolis, Ogun State, Nigeria by Sadoh, Fawole, Sadoh, Oladimeji, and Sotiloye(2006:722), on a sample of doctors, trained and auxiliary nurses, laboratory scientists and domestic staff using a multistage sampling technique from public and private healthcare facilities within the metropolis. Data was collected using an interviewer-administered, semi-structured questionnaire that assessed the practice of recapping and disposal of used needles, use of barrier equipment, hand washing and screening of transfused blood. It was found that a third of all respondents always recapped needles. Compliance with non-recapping of used needles was noted as significant problem among trained nurses and medical doctors. Although less than two thirds of respondents (63.8%) said they always used personal protective equipment, more than half of all respondents (56.5%) had never worn goggles during deliveries and at surgeries. The provision of sharps containers and screening of transfused blood by the institutions studied was uniformly high. A high percentage (94.6%) of the HCWs practiced hand washing after handling patients. This study concluded that recapping of used needles is prevalent in the health facilities studied. Noncompliance with the UPs places Nigerian HCWs at significant health risks associated with needle stick injuries.

In general the main issues noted in the above Nigerian study are suboptimal adherence patterns among HCWs towards the SPs.

2.5 CONCLUSION

This chapter presented an overview of literature related to the subject studied, standard precaution practices. Literature from varied contexts was included in the review. It is clear from this that HCWs` adherence SPs practice of is influenced by a number of factors and may differ from one HCW to another. This realisation contributes to the impetus to conduct a study that is specific to context of Botswana. All the studies reviewed highlighted the importance of adhering to SPs by HCWs in clinical settings and the relevance of this practice in infection control. The next chapter is a discussion of the methodology of the study.

CHAPTER 3: RESEARCH DESIGN AND METHOD

3.1 INTRODUCTION

Chapter two is a literature review of the studied area. This chapter focuses on discussions relating research design, and methodological and ethical issues of the study. This means that discussions of sampling, research settings, and data collection and analysis are also included in this chapter.

3.2 RESEARCH DESIGN

According to Joubert andEhrlich(2007:77) a study design refers to a structured approach researchers adopt to answer a particular research question. It can also be referred to as the ‘architecture’ of the study, as it determines how populations are sampled, and how data are collected and analysed (Joubert andEhrlich2007:77). Ethical considerations are also influenced by the choice of study design. This study utilised a quantitative descriptive cross-sectional design. This design was chosen for this study because it is an approach that enables researchers to describe variables and their relationships. In other words, descriptive cross-sectional design measures attributes and examines association between them (JoubertandEhrlich2007:85).The attributes in this case are adherence to SPs practices of HCWs in the two hospitals, in Gaborone, Botswana.

3.3 RESEARCH METHOD

3.3.1Study population

Polit and Beck (2004:563) refer to a population as the entire set of individuals who have common characteristics that are sometimes referred to as the “universe”. It is therefore not surprising for De Vos et al (2011:223) to refer to a study population as a term that sets boundaries on the study units which are in essence considered as individuals or objects in the universe who possess certain characteristics. In this study, the individuals in the universe, in other words the study population was all HCWs in the two study sites who practice SPs. Although already briefly mentioned in chapter one, the target population was

the group of HCWs who were working in hospitals in Botswana during the study period. The accessible population on the other hand, was HCWs in the emergency departments of the study sites, Princess Marina and Bokamoso government and private hospitals respectively. It is the population to which the researcher has reasonable access (Johnson and Christensen 2010:257).

3.3.2Sampling

One major decision that researchers need to take in conducting research is to decide on the nature of the data and from where they can be obtained, as the sources of data tend to have profound effects on the ultimate quality of studies (Morse2002:3-4). Such a decision for identifying and selecting sources of data is what Grbich (2007:234) and Macnee and McCabe (2008:245) refer to as sampling. To be precise, Davis and Scott (2007:155) define it as the science and practice of selecting a portion of the population in a manner that allows the entire population to be represented in the same. On examining this definition, it became apparent that a sample is, in essence, a subset of a population. Sampling is the process of selecting individuals from a population who will be studied (Burns and grove 2007:379). Convenient sampling was used for both study sites (Princess Marina government hospital and Bokamoso private hospital) and HCWs working in the emergencies departments of these sites. Convenient sampling entails using the most conveniently available object or people as study respondents (Polit and Beck 2008:341).Adopting this approach resulted in a total sample size of 74 HCWs selected from both hospitals. These respondents provided adequate information or data that generated the findings of the study.

3.3.3 Ethical issues

Ethical clearance was sought and obtained from UNISA`s Higher Degrees Committee. Permission to undertake the study was also sought and obtained from the Human Research Unit of the Ministry of Health of Botswana. The researcher visited the two study sites (Princess Marina government hospital and Bokamoso private hospital) and informed departmental heads and supervisors about the proposed study, including its aim, benefits

and significance. This was done in writing as well as verbally. Respondents were fully informed about the study. These means they were given information about the study, including its aim, objectives, benefits and rights. Following this, respondents were required to express their intentions to participate or not participate in the study. Willingness to take part in the study was expressed by respondents completing consent forms. Only respondents (HCWs) who completed and signed consent forms were allowed to participate in the study. Respondents were informed about their right to withdraw from participating at any point in the course of the study.

The Belmont Report for protecting study participants was fully adhered to. Respondents' respect, privacy, anonymity and information confidentiality was respected and protected throughout the study. The researcher assigned a study identification number to each respondent in the order in which they were enrolled in the study. No names or identifying information was noted on the questionnaires. Instead, numbered codes for respondents were used on the questionnaires. The researcher kept all questionnaires in a locked and secure file cabinet in the researcher's home until analysis. The data entry for analysis was done using only the numeric identification code to identify respondents. The data entry was performed only by the researcher. All of the administered questionnaires were destroyed using a paper shredder after completing data analysis.

This study is a descriptive study which did not require any clinical and physical intervention. However, it is possible for respondents to experience some degree of emotional and social impact from participating, particularly during data collection. Hence, respondents were made aware of how they can access psychological support if needed, in other words, if distress is indicated.

3.3.3 Data collection

Data collection is a systematic gathering of relevant information relevant for addressing the research purpose, objectives and questions of studies (Joubert and Ehrlich2007:106).This study adopted a structured method of data collection. In essence, it used a self-administered questionnaire as a data collection tool. A questionnaire is a

quick and practical way of collecting data which enables researchers to collect information from many people in a relatively cost effective way (Joubert and Katzenellenbogen 2007:108). It is also considered to be an objective way of collecting information. Use of questionnaires however is subject to recall bias, particularly in instances where they contain open ended questions. For that reason the questionnaire that was used in this study contained questions that required specific answers from pre-designated response options.

Itisalwaysagoodpracticeforresearcherstoundertakeasmall-scaletrialrunofmethods of data collection, especially when newly developed(Parahoo2006:271).The essence of this is to gather evaluative information that would enhance their feasibility and efficacy (Polit and Beck2008:348). Hence, the questionnaire developed was tested to find out whether it would ensure a comprehensive exploration of respondents` views of adherence to SPs. The questionnaire was piloted with eight health care workers. They were briefed about the purpose, benefits and significance of the study before completing the questionnaire. Such an approach was taken to enable respondents to actively and freely participate.

Piloting or preliminary investigation helps researchers to check if questions are worded in a way that will help to achieve desired results and to check if the questions are placed in the best order. Piloting the questionnaire also enables researchers to find out whether instructions to respondents are adequate and whether questions need to be more specific or even removed from the questionnaire. These strategies were adopted in this study, as clarity of meaning and language of the questionnaire were assessed during piloting. Added to this, the comprehensiveness of the content and the adequacy of instructions were also assessed.

Reliability and internal validity of the questionnaire was tested. In relation to reliability, coefficient (Cronbach's) alpha was calculated to evaluate the internal consistency and reliability of the instrument. The knowledge and attitude questions had a Coefficient (Cronbach's) alpha of <.70, while the practice questions had a Coefficient alpha of 0.785. This outcome indicates that adherence comparisons were relatively reliable. Apart from reliability and validity, difficulties in comprehension were also assessed through the use of

an open-ended question (Are any words or sentences difficult to understand?). The pilot study or preliminary investigation helped in enhancing the tool. Amendments were made to the tool after the pilot study or preliminary investigation.

The language used in the revised version or final questionnaire was simple. This was to ensure that respondents understood what was required of them. The questionnaire contained items that allowed the generation of information or data to address the research problem. The questionnaire contained different sections with specific questions for exploring knowledge of, and attitudes toward SPs and adherence patterns of HCWs to SP. Questionnaires were distributed to the study respondents at their work place by the researcher, and collected within 2 weeks of distribution.

3.3.4 Data analysis

Dataobtainedfromrespondentswereenteredonaspreadsheet.Inconsultationwitha statistician, these data was transported to statistical software, SPSS Version 20 for analysis. Descriptive statistics was used for summarizing, organizing, graphing and describing the data. Inferential statistics was also used to allow the researcher to test relationships and differences. Specifically, unpaired t-test, Mann-Whitney test, Fisher's test, Spearman's correlation and Chi-square were used test to investigate relationships, differences and the significance of these differences between variables and groups. knowledge of, and attitudes towards SPs and practice of SPs scored and ranked, scored and depicted using descriptive statistics (thus forming an ordinal data). the Mann-Whitney test was utilised to explore the type of relationship these variables have among HCWs in of the two study site hospitals. In instances where a 2x2 Chi-square test was needed, the Fisher's exact test was used to examine relationships between variables. Chi-square test was employed to examine relationships and differences between three or more variables and the level of significance in the differences. The significance of differences in the practice patterns among the staff within and between hospitals was assessed using the above tests.

3.3.5 Validity and reliability of the study

3.3.5.1 Reliability

Reliability or precision refers to the repeatability of a measurement or study findings (Joubert and Ehrlich: 2007:79). Simply, it relates to the degree of consistency or accuracy with which an instrument measures the attribute it is designed to measure (JoubertandEhrlich2007:117). To ensure reliability, the instrument used in this study was tested on similar populations, and its internal consistency reliability was evaluated using Coefficient alpha (Cronbach's alpha). The internal consistency reliability has been evaluated using Coefficient alpha (Cronbach's alpha) and the outcome of this (rho greater .7) indicated that the tool is reliable. Different sources were consulted including an expert opinion before using the instrument in the field. The questions in the self-administered questionnaire were structured in a non-ambiguous manner to ensure that the scales measure attributes they were designed to measure. All these have been cross-checked in advance by an experienced research supervisor and statistician before finalising the questionnaire. Reliability was also ensured by offering explanations about the study to respondents during data collection, in other words before completing the questionnaire. This was to ensure that they understood what was expected of them.

3.3.5.2 Validity

Validity is the degree to which a research instrument measures what it is supposed to measure (Polit and Beck2008:373-377). In the context of research designs validity is about the approximate truth of an inference or reality. This means the notion of validity is relative; it is about degrees or levels, such as high, medium or low rather than one of presence or absence. There are variants of validity, and some of these are now discussed.

Construct validity was crucial for this study. This relates to the degree to which an instrument has an appropriate sample of items for the construct being measured and adequately covers the construct domain (Polit and Beck 2008:458). Constructs are the means for linking the operations used in a study to a relevant conceptualization. Hence, in this study knowledge of SPs and attitudes of HCWs toward the same are concepts or

attributes that are theoretically assumed to have influence on adherence patterns of the HCWs to SP. Adherence patterns are the outcome construct of this study (Polit and Beck 2008:458). Construct validity was enhanced in this study because of the inclusion of the above attributes in the tool used for data collection.

Content validity is relevant to this study. Thus, thorough conceptualization of the constructs (knowledge of SPs, attitudes towards SPs and practice of SPs by HCWs) were taking into account in designing the instrument. Designing the instrument was also influenced by the CDC SP guidelines. The options available for each question were as exhaustive as possible and the researcher also made sure that the scales that were designed to measure different attributes were made up of items that measure the respective attributes in question. The data collection instrument was subjected to piloting before use to check its content validity which refers to the appropriateness of the content of the instrument.

External validity is the validity that relates to how inferences about observed relationships will hold over variations in persons, settings, time, or measures of the outcomes (Polit and Beck 2008:287). It is about the extent to which the results of a study can be generalized beyond the sample (Polit and Beck 2008:236). The use of convenience sampling limits the generalisability of the results because the sample that was used was not representative of the general population. The use of only two emergencies departments of the study sites also limits the external validity of the study.

Internal validity is about the approximate truth of an inference or reality. This means the notion of validity is relative; it is about degrees or levels, such as high, medium or low rather than one of presence or absence. Internal validity is the degree to which observed changes in a dependent variable can be attributed to changes in an independent variable. The descriptive cross sectional research design helped enhance insight into this area of study. It was also noted that it enabled the researcher to develop strategies that would eliminate or at least reduce the impact of confounding variables. This design ensured that the study outcomes were in the main a function of the independent variables. In other words, the descriptive cross sectional correlational research design was internally valid or has internal validity.

3.4 CONCLUSION

This chapter discussed study questionnaire, its preliminary investigation (pilot) to assess its language, level of comprehension and internal consistency. The chapter also focused on data collection, validity and reliability and ethical issues. The following chapter presents the results of the study and associated discussions.

CHAPTER 4: FINDINGS: ANALYSIS AND INTERPRETATION

4.1 INTRODUCTION

Analysis is the process of organising and synthesising data so as to answer research questions and test hypotheses (Polit and Beck 2008:747).It is highlighted in the literature that analysis of any study should take into account the variables at hand and appropriate type of statistical test for identified variables (Joubert and Ehlrich 2007:77). In this chapter the research findings are presented. The chapter also focuses on data management and analysis.

4.2 DATA MANAGEMENT AND ANALYSIS

Completed questionnaires collected from HCW were coded to maintain anonymity. Data from each of the questionnaires was entered into an excel sheet and later transported into data analysis software, SPSS version 20.

Frequency tables and other types of descriptive figures such as bar and pie charts were developed for the different variables with the view to illustrate the findings of the study. The study data was also analysed using different statistical significance tests. Examples of these include Mann-Whitney Independent tests for two samples, Spearman's rho correlation analysis and Chi-square tests. Fisher's exact test was also used.

4.3 RESEARCH RESULTS AND FURTHER ANALYSIS

Using the SPSS 20 software, the following are the results of the studyafter performing the above statistical tests. They include both descriptive and inferential statistical findings.

Table 4.1: Gender distribution of HCWs by age in the emergency department of both the Princess Marina Hospital (PMH) and Bokamoso Private Hospital (BPH), Gaborone, November 2012.

HOSPITAL	GENDER	AGE(years)			
		15-24	**25-34**	**35-44**	**45-54**
		Count	Count	Count	Count
PMH	Male	2	6	1	1
	Female	2	18	6	3
BPH	Male	8	8	1	1
	Female	10	6	1	0

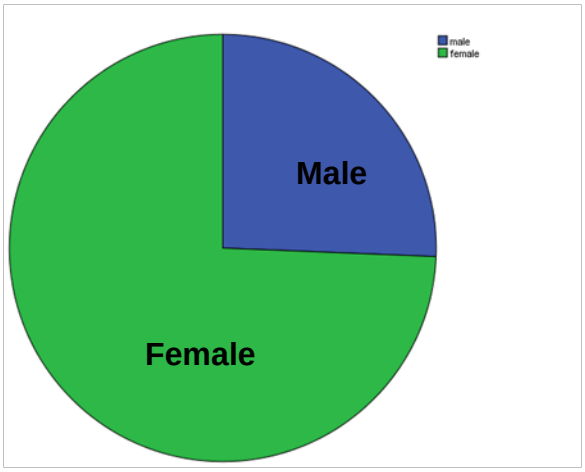

Figure 4.1: Depicting the sex distribution of health care workers in the emergency department of PMH, Gaborone, November 2012.

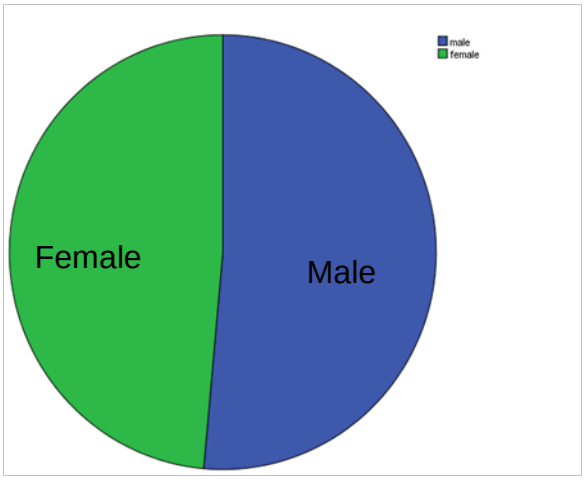

Figure 4.2:Depicting the sex distribution of health care workers in the emergencydepartment of BPH, Gaborone, November 2012.

As shown in tables 4.1 and figures 4.1 & 4.2, the majority of health care workers were females in the emergency department of both the Princess Marina Hospital (PMH) and Bokamoso Private Hospital (BPH), in Gaborone in November 2012. However, there were more males in BPH than in the PMH emergency department (Tables 4.1).

Table 4.2: Cross tabulation SPSS output of gender by heath facility (PMH Vs BPH), Gaborone, November 2012.

Gender		Health Facility		Total
		PMH	BPH	
Male	Count	10	18	28
	% within gender	35.7%	64.3%	100.0%
	% within health facility	25.6%	51.4%	37.8%
Female	Count	29	17	46
	% within gender	63.0%	37.0%	100.0%
	% within health facility	74.4%	48.6%	62.2%
Total	Count	39	35	74
	% within gender	52.7%	47.3%	100.0%
	% within health facility	100.0%	100.0%	100.0%

Table 4.3: Chi-square test SPSS output of gender by heath facility (PMH Vs BPH), Gaborone, November 2012.

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	5.215[a]	1	0.022		
Continuity Correction[b]	4.176	1	0.041		
Likelihood Ratio	5.268	1	0.022		
Fisher's Exact Test				0.031	0.020
Linear-by-Linear Association	5.145	1	0.023		
N of Valid Cases	74				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 13.24.

b. Computed only for a 2x2 table

As illustrated SPSS outputs in Table 4.2 (above), 29 (74.4%) of the HCWs in PMH were females while this was 17 (48.6%) for BPH.The Fisher's Exact Test indicates that there was a significant difference in the frequency distribution of females and males in the two hospitals (N=74, Exact sig=0.031) at the level of 0.05 (Table 4.3). There were more females in PMH andmore males in BPH (Table 4.2).

Table 4.4: Sum of Ranks (Mann-Whitney test) SPSS output of age, level of education and job title of the HCWs by heath facility (PMH Vs BPH), Gaborone, November 2012.

	FACILITY	**N**	**Mean Rank**	**Sum of Ranks**
AGE	PMH	39	33.41	1303.00
	BPH	35	42.06	1472.00
	Total	74		
LEVEL OF EDUCATION	PMH	39	36.65	1429.50
	BPH	35	38.44	1345.50
	Total	74		
JOB TITLE	PMH	39	40.37	1574.50
	BPH	35	34.30	1200.50
	Total	74		

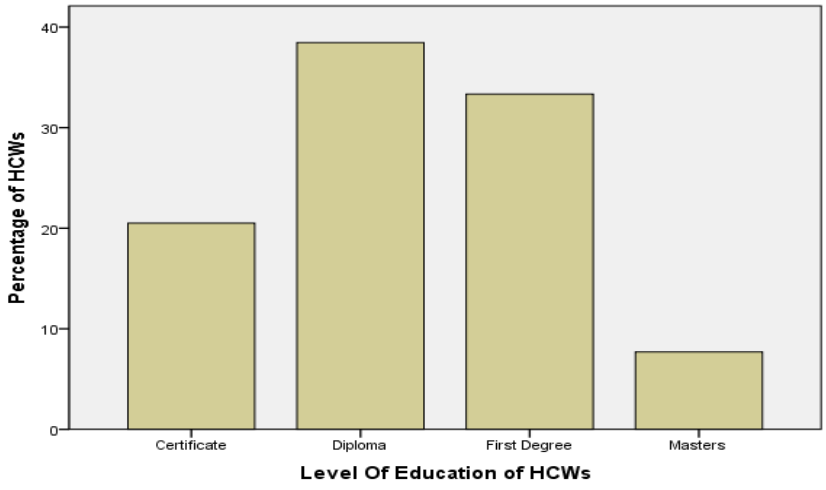

Figure 4.3: Percent distribution of levels of education of HCWs in the emergency department of PMH, Gaborone, November 2012.

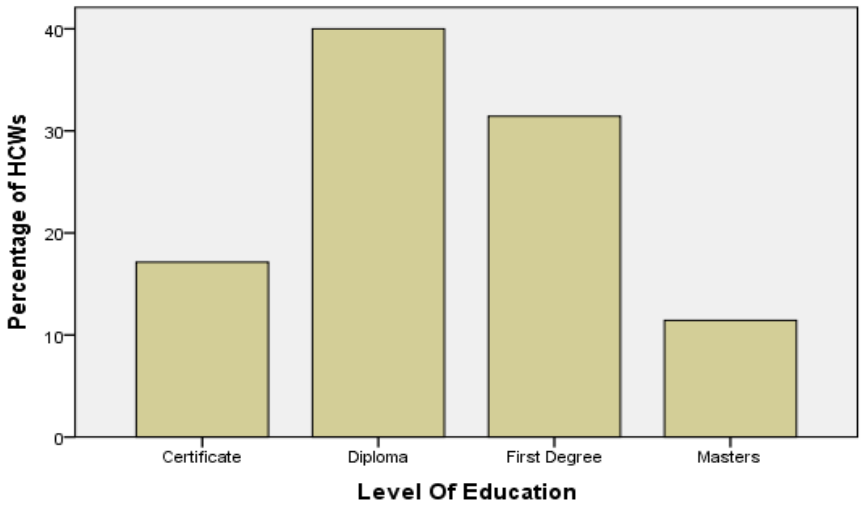

Figure 4.4: Percent distribution of level of education of HCWs in the emergency departmentof BPH, Gaborone, November 2012.

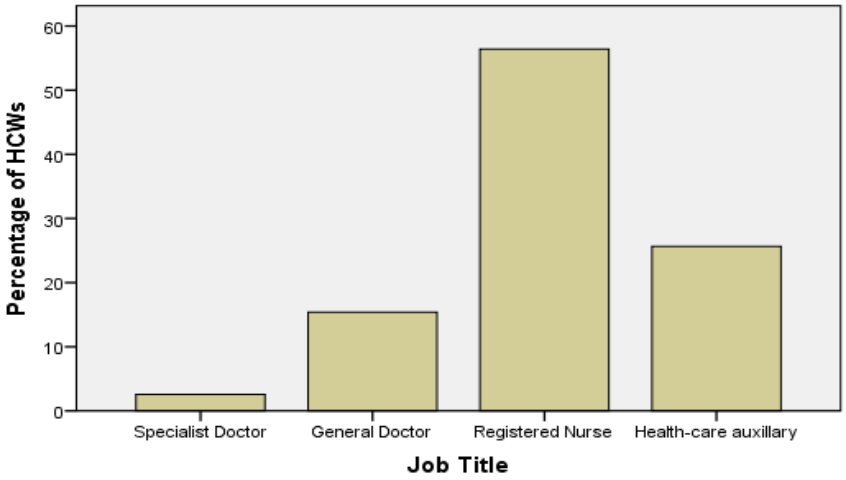

Figure 4.5: Percent distribution of HCWs of the emergency department in PMH, Gaborone, November 2012.

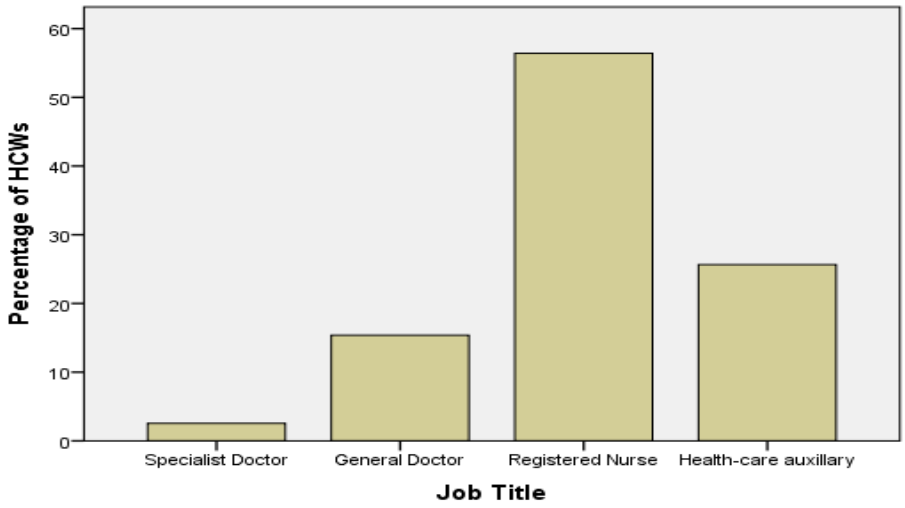

Figure 4.6: Percent distribution of HCWs of the emergency department in BPH, Gaborone, November 2012.

Table 4.5: Mann-Whitney test (Sum of Ranks) SPSS output of age, level of education and job title of the HCWs by heath facility (PMH Vs BPH), Gaborone, November 2012.

	AGE	LEVEL OF EDUCATION	JOB TITLE
Mann-Whitney U	523.000	649.500	570.500
Wilcoxon W	1303.000	1429.500	1200.500
Z	-1.938	-0.377	-1.323
Asymp. Sig. (2-tailed)	0.053	0.706	0.186

a. Grouping Variable: FACILITY

Figures 4.3 & 4.5 (for PMH) and 4.4 & 4.6 (for BPH) illustrate age group, educational levels and job titles among HCWs in both hospitals. The sum of ranks SPSS (Table 4.4) analysis with the Mann-Whitney testy depicted that there was no significant difference between HCWs in PMH and BPH when in the context of their age group, educational levels and the job titles (Table 4.5). Thus, considering the almost equal sample size of 35 for BPH and 39 for PMH, the findings in the two hospitals can be compared using different statistical tests, mostly non parametric since most of the variables were ordinal.

Table 4.6: Describes SPSS output for the Sum of Ranks for knowledge of SPs, attitude towards SPs and practice of SPs amongst the HCWs in the two hospitals combined using level of education (specifically Certificate and Diploma in this case) as grouping variables, Gaborone, November 2012.

Ranks

	LEVEL OF EDUCATION	N	Mean Rank	Sum of Ranks
KNOWLEDGE - SCALE YOUR KNOWLEDGE ABOUT SPs	Certificate	14	17.25	241.50
	Diploma	29	24.29	704.50
	Total	43		
ATTITUDE - SPs ARE VERY IMPORTANT IN HEALTH CARE PROCEDURES	Certificate	14	19.57	274.00
	Diploma	29	23.17	672.00
	Total	43		
PRACTICE - I STRICTLY FOLLOW SP GUIDELINES	Certificate	14	18.57	260.00
	Diploma	29	23.66	686.00
	Total	43		

Table 4.7: Describes SPSS output for the Sum of Ranks for knowledge of SPs, attitude towards SPs and practice of SPs amongst the HCWs in the two hospitals combined using level of education (specifically Certificate and First degree in this case) as grouping variables, Gaborone, November 2012.

Ranks

	LEVEL OF EDUCATION	N	Mean Rank	Sum of Ranks
KNOWLEDGE - SCALE YOUR KNOWLEDGE ABOUT SPs	Certificate	14	14.64	205.00
	First degree	24	22.33	536.00
	Total	38		
ATTITUDE - SPs ARE VERY IMPORTANT IN HEALTH CARE PROCEDURES	Certificate	14	18.07	253.00
	First degree	24	20.33	488.00
	Total	38		
PRACTICE - I STRICTLY FOLLOW SP GUIDELINES	Certificate	14	18.82	263.50
	First degree	24	19.90	477.50
	Total	38		

Table 4.8: Describes SPSS output of Mann-Whitney test done on the Sum of Ranks for knowledge of SPs, attitude towards SPs and practice of SPs amongst the HCWs in the two hospitals combined using level of education (specifically Certificate and Diploma in this case) as grouping variables, Gaborone, November 2012.

Test Statistics[a]

	KNOWLEDGE - SCALE YOUR KNOWLEDGE ABOUT SPs	ATTITUDE - SPs ARE VERY IMPORTANT IN HEALTH CARE PROCEDURES	PRACTICE - I STRICTLY FOLLOW SP GUIDELINES
Mann-Whitney U	136.500	169.000	155.000
Wilcoxon W	241.500	274.000	260.000
Z	-1.988	-1.010	-1.372
Asymp. Sig. (2-tailed)	.047	.312	.170

a. Grouping Variable:LEVEL OF EDUCATION

Table 4.9: Describes SPSS output of Mann-Whitney test done on the Sum of Ranks for knowledge of SPs, attitude towards SPs and practice of SPs amongst the HCWs in the two hospitals combined using level of education (specifically Certificate and First degree in this case) as grouping variables, Gaborone, November 2012.

	KNOWLEDGE - SCALE YOUR KNOWLEDGE ABOUT SPs	ATTITUDE - SPs ARE VERY IMPORTANT IN HEALTH CARE PROCEDURES	PRACTICE - I STRICTLY FOLLOW SP GUIDELINES
Mann-Whitney U	100.000	148.000	158.500
Wilcoxon W	205.000	253.000	263.500
Z	-2.445	-.685	-.324
Asymp. Sig. (2-tailed)	.014	.494	.746
Exact Sig. [2*(1-tailed Sig.)]	.040[b]	.560[b]	.777[b]

a. Grouping Variable: LEVEL OF EDUCATION

b. Not corrected for ties.

Table 4.10: Describes SPSS output for the Sum of Ranks for knowledge of SPs, attitude towards SPs and practice of SPs amongst the HCWs in the two hospitals combined using level of education (specifically Certificate and Masters in this case) as grouping variables, Gaborone, November 2012.

Ranks

	LEVEL OF EDUCATION	N	Mean Rank	Sum of Ranks
KNOWLEDGE - SCALE YOUR KNOWLEDGE ABOUT SPs	Certificate	14	8.25	115.50
	Masters	7	16.50	115.50
	Total	21		
ATTITUDE - SPs ARE VERY IMPORTANT IN HEALTH CARE PROCEDURES	Certificate	14	10.29	144.00
	Masters	7	12.43	87.00
	Total	21		
PRACTICE - I STRICTLY FOLLOW SP GUIDELINES	Certificate	14	10.21	143.00
	Masters	7	12.57	88.00
	Total	21		

Table 4.11: Describes SPSS output for the Sum of Ranks for knowledge of SPs, attitude towards SPs and practice of SPs amongst the HCWs in the two hospitals combined using level of education (specifically Diploma and First degree in this case) as grouping variables, Gaborone, November 2012.

Ranks

	LEVEL OF EDUCATION	N	Mean Rank	Sum of Ranks
KNOWLEDGE - SCALE YOUR KNOWLEDGE ABOUT SPs	Diploma	29	25.79	748.00
	First degree	24	28.46	683.00
	Total	53		
ATTITUDE - SPs ARE VERY IMPORTANT IN HEALTH CARE PROCEDURES	Diploma	29	27.21	789.00
	First Degree	24	26.75	642.00
	Total	53		
PRACTICE - I STRICTLY FOLLOW SP GUIDELINES	Diploma	29	29.21	847.00
	First degree	24	24.33	584.00
	Total	53		

Table 4.12: Describes SPSS output of Mann-Whitney test done on the Sum of Ranks for knowledge of SPs, attitude towards SPs and practice of SPs amongst the HCWs in the two hospitals combined using level of education (specifically Certificate and Masters in this case) as grouping variables, Gaborone, November 2012.

Test Statistics[a]

	KNOWLEDGE - SCALE YOUR KNOWLEDGE ABOUT SPs	ATTITUDE - SPs ARE VERY IMPORTANT IN HEALTH CARE PROCEDURES	PRACTICE - I STRICTLY FOLLOW SP GUIDELINES
Mann-Whitney U	10.500	39.000	38.000
Wilcoxon W	115.500	144.000	143.000
Z	-3.091	-.845	-.949
Asymp. Sig. (2-tailed)	.002	.398	.343
Exact Sig. [2*(1-tailed Sig.)]	.002[b]	.488[b]	.443[b]

T

a. Grouping Variable: LEVEL OF EDUCATION

b. Not corrected for ties.

Table 4.13: Describes SPSS output of Mann-Whitney test done on the Sum of Ranks for knowledge of SPs, attitude towards SPs and practice of SPs amongst the HCWs in the two hospitals combined using level of education (specifically Diploma and First Degree in this case) as grouping variables, Gaborone, November 2012.

Test Statistics[a]

	KNOWLEDGE - SCALE YOUR KNOWLEDGE ABOUT SPs	ATTITUDE - SPs ARE VERY IMPORTANT IN HEALTH CARE PROCEDURES	PRACTICE - I STRICTLY FOLLOW SP GUIDELINES
Mann-Whitney U	313.000	342.000	284.000
Wilcoxon W	748.000	642.000	584.000
Z	-.773	-.128	-1.268
Asymp. Sig. (2-tailed)	.440	.898	.205

a. Grouping Variable: LEVEL OF EDUCATION

Table 4.14: Describes SPSS output for the Sum of Ranks for knowledge of SPs, attitude towards SPs and practice of SPs amongst the HCWs in the two hospitals combined using level of education (specifically Diploma and Masters in this case) as grouping variables, Gaborone, November 2012.

Ranks

	LEVEL OF EDUCATION	N	Mean Rank	Sum of Ranks
KNOWLEDGE - SCALE YOUR KNOWLEDGE ABOUT SPs	Diploma	29	16.50	478.50
	Maters	7	26.79	187.50
	Total	36		
ATTITUDE - SPs ARE VERY IMPORTANT IN HEALTH CARE PROCEDURES	Diploma	29	18.36	532.50
	Masters	7	19.07	133.50
	Total	36		
PRACTICE - I STRICTLY FOLLOW SP GUIDELINES	Diploma	29	18.69	542.00
	Masters	7	17.71	124.00
	Total	36		

Table 4.15: Describes SPSS output for the Sum of Ranks for knowledge of SPs, attitude towards SPs and practice of SPs amongst the HCWs in the two hospitals combined using level of education (specifically First degree and Masters in this case) as grouping variables, Gaborone, November 2012.

Ranks

	HIGHEST LEVEL OF EDUCATION	N	Mean Rank	Sum of Ranks
KNOWLEDGE - SCALE YOUR KNOWLEDGE ABOUT SPs	First degree	24	14.25	342.00
	Masters	7	22.00	154.00
	Total	31		
ATTITUDE - SPs ARE VERY IMPORTANT IN HEALTH CARE PROCEDURES	First degree	24	15.83	380.00
	Masters	7	16.57	116.00
	Total	31		
PRACTICE - I STRICTLY FOLLOW SP GUIDELINES	First degree	24	15.46	371.00
	Masters	7	17.86	125.00
	Total	31		

Table 4.16: Describes SPSS output of Mann-Whitney test done on the Sum of Ranks for knowledge of SPs, attitude towards SPs and practice of SPs amongst the HCWs in the two hospitals combined using level of education (specifically Diploma and Masters in this case) as grouping variables, Gaborone, November 2012.

Test Statistics[a]

	KNOWLEDGE - SCALE YOUR KNOWLEDGE ABOUT SPs	ATTITUDE - SPs ARE VERY IMPORTANT IN HEALTH CARE PROCEDURES	PRACTICE - I STRICTLY FOLLOW SP GUIDELINES
Mann-Whitney U	43.500	97.500	96.000
Wilcoxon W	478.500	532.500	124.000
Z	-2.663	-.192	-.247
Asymp. Sig. (2-tailed)	.008	.848	.805
Exact Sig. [2*(1-tailed Sig.)]	.018[b]	.876[b]	.845[b]

a. Grouping Variable: LEVEL OF EDUCATION

b. Not corrected for ties.

Table 4.17: Describes SPSS output of Mann-Whitney test done on the Sum of Ranks for knowledge of SPs, attitude towards SPs and practice of SPs amongst the HCWs in the two hospitals combined using level of education (specifically First degree and Masters in this case) as grouping variables, Gaborone, November 2012.

Test Statistics[a]

	KNOWLEDGE - SCALE YOUR KNOWLEDGE ABOUT SPs	ATTITUDE - SPs ARE VERY IMPORTANT IN HEALTH CARE PROCEDURES	PRACTICE - I STRICTLY FOLLOW SP GUIDELINES
Mann-Whitney U	42.000	80.000	71.000
Wilcoxon W	342.000	380.000	371.000
Z	-2.410	-.228	-.708
Asymp. Sig. (2-tailed)	.016	.819	.479
Exact Sig. [2*(1-tailed Sig.)]	.048[b]	.872[b]	.563[b]

a. Grouping Variable: HIGHEST LEVEL OF EDUCATION

b. Not corrected for ties.

In the above Mann-Whitney tests (see Tables 4.8 & 4.9) a statistically significant difference at the 0.05 level in knowledge of SPs was noted when HCWs with Certificates were

compared with those with Diploma, First degree and Masters. It was apparent that HCWs with Masters degrees were more knowledgeable about SPs than those with First degree (see Tables 4.12 & 4.13). HCWs with First degree were more knowledgeable about SPs than those with Diploma. Similarly, HCWs with Diploma knew more about SPs than those with Certificate. There was also a significant difference at the 0.05 level in the knowledge of SPs between HCWs with Masters, Diploma and First degree (Tables 4.16 & 4.17). This pattern was noted when attitude towards SPs and practice of SPs among HCWs were compared with different levels of education.

Table 4.18: Describes SPSS output for the Sum of Ranks for knowledge of SPs, attitude towards SPs and practice of SPs amongst the GPs and RNs in the two hospitals combined using job title as grouping variable, Gaborone, November 2012.

Ranks

	JOB TITLE	N	Mean Rank	Sum of Ranks
KNOWLEDGE - SCALE YOUR KNOWLEDGE ABOUT SPs	GPs	17	26.68	453.50
	RNs	38	28.59	1086.50
	Total	55		
ATTITUDE - SPs ARE VERY IMPORTANT IN HEALTH CARE PROCEDURES	GPs	17	26.21	445.50
	RNs	38	28.80	1094.50
	Total	55		
PRACTICE - I STRICTLY FOLLOW SP GUIDELINES	GPs	17	23.00	391.00
	RNs	38	30.24	1149.00
	Total	55		

Table 4.19: Describes SPSS output of Mann-Whitney test done on the Sum of Ranks for knowledge of SPs, attitude towards SPs and practice of SPs amongst the GPs and RNs in the two hospitals combined using job title as grouping variable, Gaborone, November 2012.

Test Statistics[a]

	KNOWLEDGE - SCALE YOUR KNOWLEDGE ABOUT SPs	ATTITUDE - SPs ARE VERY IMPORTANT IN HEALTH CARE PROCEDURES	PRACTICE - I STRICTLY FOLLOW SP GUIDELINES
Mann-Whitney U	300.500	292.500	238.000
Wilcoxon W	453.500	445.500	391.000
Z	-.486	-.659	-1.718
Asymp. Sig. (2-tailed)	.627	.510	.086

a. Grouping Variable: JOB TITLE

Table 4.20: Describes SPSS output for the Sum of Ranks for knowledge of SPs, attitude towards SPs and practice of SPs amongst the RNs and HCAs in the two hospitals combined using job title as grouping variable, Gaborone, November 2012.

Ranks

	JOB TITLE	N	Mean Rank	Sum of Ranks
KNOWLEDGE - SCALE YOUR KNOWLEDGE ABOUT SPs	RNs	38	30.95	1176.00
	HCAs	17	21.41	364.00
	Total	55		
ATTITUDE - SPs ARE VERY IMPORTANT IN HEALTH CARE PROCEDURES	RNs	38	29.39	1117.00
	HCAs	17	24.88	423.00
	Total	55		
PRACTICE - I STRICTLY FOLLOW SP GUIDELINES	RNs	38	29.72	1129.50
	HCAs	17	24.15	410.50
	Total	55		

Table 4.21: Describes SPSS output of Mann-Whitney test done on the Sum of Ranks for knowledge of SPs, attitude towards SPs and practice of SPs amongst the RNs and HCAs in the two hospitals combined using job title as grouping variable, Gaborone, November 2012.

Test Statistics[a]

	KNOWLEDGE - SCALE YOUR KNOWLEDGE ABOUT SPs	ATTITUDE - SPs ARE VERY IMPORTANT IN HEALTH CARE PROCEDURES	PRACTICE - I STRICTLY FOLLOW SP GUIDELINES
Mann-Whitney U	211.000	270.000	257.500
Wilcoxon W	364.000	423.000	410.500
Z	-2.357	-1.120	-1.318
Asymp. Sig. (2-tailed)	.018	.263	.187

a. Grouping Variable: JOB TITLE

Table 4.22: Describes SPSS output for the Sum of Ranks for knowledge of SPs, attitude towards SPs and practice of SPs amongst the GPs and HCAs in the two hospitals combined using job title as grouping variable, Gaborone, November 2012.

Ranks

	JOB TITLE	N	Mean Rank	Sum of Ranks
KNOWLEDGE - SCALE YOUR KNOWLEDGE ABOUT SPs	GPs	17	19.76	336.00
	HCAs	17	15.24	259.00
	Total	34		
ATTITUDE - SPs ARE VERY IMPORTANT IN HEALTH CARE PROCEDURES	GPs	17	17.94	305.00
	HCAs	17	17.06	290.00
	Total	34		
PRACTICE - I STRICTLY FOLLOW SP GUIDELINES	GPs	17	17.00	289.00
	HCAs	17	18.00	306.00
	Total	34		

Table 4.23: Describes SPSS output of Mann-Whitney test done on the Sum of Ranks for knowledge of SPs, attitude towards SPs and practice of SPs amongst the GPs and HCAs in the two hospitals combined using job title as grouping variable, Gaborone, November 2012.

Test Statistics[a]

	KNOWLEDGE - SCALE YOUR KNOWLEDGE ABOUT SPs	ATTITUDE - SPs ARE VERY IMPORTANT IN HEALTH CARE PROCEDURES	PRACTICE - I STRICTLY FOLLOW SP GUIDELINES
Mann-Whitney U	106.000	137.000	136.000
Wilcoxon W	259.000	290.000	289.000
Z	-1.563	-.287	-.337
Asymp. Sig. (2-tailed)	.118	.774	.736
Exact Sig. [2*(1-tailed Sig.)]	.193[b]	.812[b]	.786[b]

a. Grouping Variable: JOB TITLE

b. Not corrected for ties.

When knowledge of SPs, attitudes towards SPs and practice of SPs among the different cadres in the two hospitals were compared using the Mann-Whitney test and job title as a grouping variable, it was observed that apart from the statistically significance difference in the knowledge of SPsbetween RNs and HCAs, there was no significant difference in the knowledge of SPs, attitudes towards SPs and practice of SPs between GPs and RNs, RNs and HCAs, and GPs and HCAs (see Tables 4.19, 4.21 & 4.23).

Table 4.24: Frequency distribution of scale of knowledge of SPs by the HCWs in the emergency department of both the PMH and BPH, Gaborone, November 2012.

Scale your knowledge about SPs	**Frequency**		**Percent (%)**		**Cumulative percent**	
	PMH	**BPH**	**PMH**	**BPH**	**PMH**	**BPH**
Very poor	1	2	2.6	5.7	2.6	5.7
Poor	0	0	0.0	0.0	2.6	5.7
Neutral	8	6	20.5	17.1	23.1	22.9
Adequate	24	23	61.5	65.7	84.6	88.6
Very adequate	6	4	15.4	11.4	100	100.0
Total	39	39	100	100.0		

Table 4.25: Frequency distribution of attitude of HCWs towards SPs in the emergency department of PMH and BPH, Gaborone, November 2012.

SPs are very important and necessary approaches in health care procedures. What is your personal view/attitude?	**Frequency**		**Percent (%)**		**Cumulative percent**	
	PMH	**BPH**	**PMH**	**BPH**	**PMH**	**BPH**
Strongly disagree	5	2	12.8	5.7	12.6	5.7
Disagree	0	0	0.0	0.0	12.8	5.7
Neutral	2	0	5.1	0.0	17.9	5.7
Agree	11	8	28.2	22.9	46.2	28.6
Strongly agree	21	25	53.8	71.4	100.0	100.0
Total	39	39	100.0	100.0		

Table 4.26: Frequency distribution of practice patterns of SPs by HCWs in the emergency department of PMH and BPH, Gaborone, November 2012.

Whenever I am on duty in my station I strictly follow SP Guidelines	**Frequency**		**Percent (%)**		**Cumulative percent**	
	PMH	**BPH**	**PMH**	**BPH**	**PMH**	**BPH**
Never	1	0	2.6	0.0	2.6	0.0
Rarely	1	0	2.6	0.0	5.1	0.0
Occasionally	8	0	20.5	0.0	25.6	0.0
Sometimes	17	28	43.6	68.6	69.2	68.6
Always	12	11	30.8	31.4	100.0	100.0
Total	39	39	100.0	100.0		

Table 4.27: Describes SPSS Spearman's rho correlation analysis to examine whether there is a relationship between knowledge of SPs and attitude towards SPs amongst the HCWs in PMH, (Gaborone, November 2012).

NON-PARAMETRIC TEST - SPEARMAN'S RHO CORRELATIONS (PMH)

Nonparametric Correlations (PMH ONLY)

Correlations

			KNOWLEDEG - SCALE YOUR KNOWLEDGE ABOUT SPs	**ATTITUDE - SPs ARE VERY IMPORTANT IN HEALTH CARE PROCEDURES.**
Spearman's rho	KNOWLEDGE - SCALE YOUR KNOWLEDGE ABOUT SPs	Correlation Coefficient	1.000	0.112
		Sig. (2-tailed)	.	0.498
		N	39	39
	ATTITUDE - SPs ARE VERY IMPORTANT IN HEALTH CARE PROCEDURES.	Correlation Coefficient	0.112	1.000
		Sig. (2-tailed)	0.498	.
		N	39	39

A Spearman's rho correlation analysis was conducted to examine whether there is a relationship between knowledge of SPs and attitude towards SPs amongst HCWs in PMH. The results revealed a non-significant and positive relationship (r = 0.11, N = 39, p = 0.50)(see Table 4.27).

Table 4.28: Describes SPSS Spearman's rho correlation analysis to examine whether there is a relationship between knowledge of SPs and attitude towards SPs amongst the HCWs in BPH, (Gaborone, November 2012).

NON-PARAMETRIC TEST - SPEARMAN'S RHO CORRELATIONS (BPH)

Nonparametric Correlations (BPH ONLY)

Correlations

			KNOWLEDEG - SCALE YOUR KNOWLEDGE ABOUT SPs	ATTITUDE - SPs ARE VERY IMPORTANT IN HEALTH CARE PROCEDURES.
Spearman's rho	KNOWLEDEG - SCALE YOUR KNOWLEDGE ABOUT SPs	Correlation Coefficient	1.000	-0.001
		Sig. (2-tailed)	.	0.994
		N	35	35
	ATTITUDE - SPs ARE VERY IMPORTANT IN HEALTH CARE PROCEDURES.	Correlation Coefficient	-0.001	1.000
		Sig. (2-tailed)	0.994	.
		N	35	35

A Spearman's rho correlation analysis was conducted to examine whether there was a relationship between knowledge of SPs and their attitude towards SPs amongst the HCWs in BPH. The results revealed a non-significant and negative relationship ($r = -0.001$, $N = 35$, $p = 1.00$) at the 0.05 level (see Table 4.28).

Table 4.29: Describes SPSS Spearman's rho correlation analysis to examine whether there is a relationship between knowledge of SPs and practice of SPs amongst the HCWs in BPH (Gaborone, November 2012).

Nonparametric Correlations (BPH ONLY)

Correlations

			KNOWLEDEG - SCALE YOUR KNOWLEDGE ABOUT SPs	**PRACTICE - I STRICTLY FOLLOW SP GUIDELINES**
Spearman's rho	KNOWLEDGE - SCALE YOUR KNOWLEDGE ABOUT SPs	Correlation Coefficient	1.000	0.011
		Sig. (2-tailed)	.	0.951
		N	35	35
	PRACTICE - I STRICTLY FOLLOW SP GUIDELINES	Correlation Coefficient	0.011	1.000
		Sig. (2-tailed)	0.951	.
		N	35	35

A Spearman's rho correlation analysis was conducted to examine whether there was a relationship between knowledge and practice of SPs amongst the HCWs in BPH. The results revealed a non-significant and positive relationship ($r = 0.011$, $N = 35$, $p = 0.95$) at the 0.05 level (see Table 4.29).

Table 4.30: Describes SPSS Spearman's rho correlation analysis to examine whether there is a relationship between knowledge of SPs and practice of SPs amongst the HCWs in PMH, (Gaborone, November 2012).

Nonparametric Correlations (PMH ONLY)

Correlations

			ATTITUDE - SPs ARE VERY IMPORTANT IN HEALTH CARE PROCEDURES.	**PRACTICE - I STRICTLY FOLLOW SP GUIDELINES**
Spearman's rho	ATTITUDE - SPs ARE VERY IMPORTANT IN HEALTH CARE PROCEDURES.	Correlation Coefficient	1.000	0.032
		Sig. (2-tailed)	.	0.846
		N	39	39
	PRACTICE - I STRICTLY FOLLOW SP GUIDELINES	Correlation Coefficient	0.032	1.000
		Sig. (2-tailed)	0.846	.
		N	39	39

A Spearman's rho correlation analysis was conducted to examine whether there was a relationship between attitude towards and practice of SPs amongst the HCWs in PMH. The results revealed a non-significant and positive relationship ($r = 0.03$, $N = 39$, $p = 0.85$) at the 0.05 level (see table 4.30).

Table 4.31: Describes SPSS output of Mann-Whitney test done on the sum of the ranks score of knowledge of SPs, attitude towards SPs and practice of SPS among the HCWs in PMH and BPH, (Gaborone, November 2012).

	KNOWLEDGE - SCALE YOUR KNOWLEDGE ABOUT SPs	ATTITUDE - SPs ARE VERY IMPORTANT IN HEALTH CARE PROCEDURES	PRACTICE - I STRICTLY FOLLOW SP GUIDELINES
Mann-Whitney U	658.000	547.500	558.000
Wilcoxon W	1288.000	1327.500	1338.000
Z	-0.309	-1.697	-1.508
Asymp. Sig. (2-tailed)	0.757	0.090	0.132

a. Grouping Variable: FACILITY

Mann-Whitney test for two independent samples comparing knowledge of SPs, attitude towards SPs and practice of SPs in between PMH and BPH – no statistically significant difference at the 0.05 level between HCWs in PMH and BPH in the context of their knowledge of SPs, attitude towards SPs and practice of SPs (see Tables 4.29, 4.30&4.31).

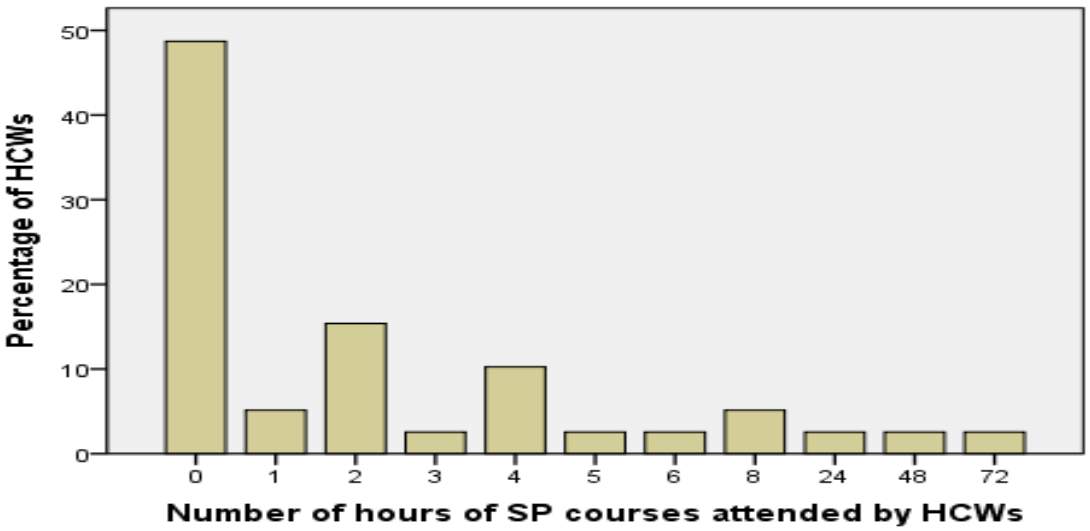

Figure4.7: Percent distribution of number of hours of SP courses attended by HCWs of the emergency department in PMH, Gaborone, November 2012.

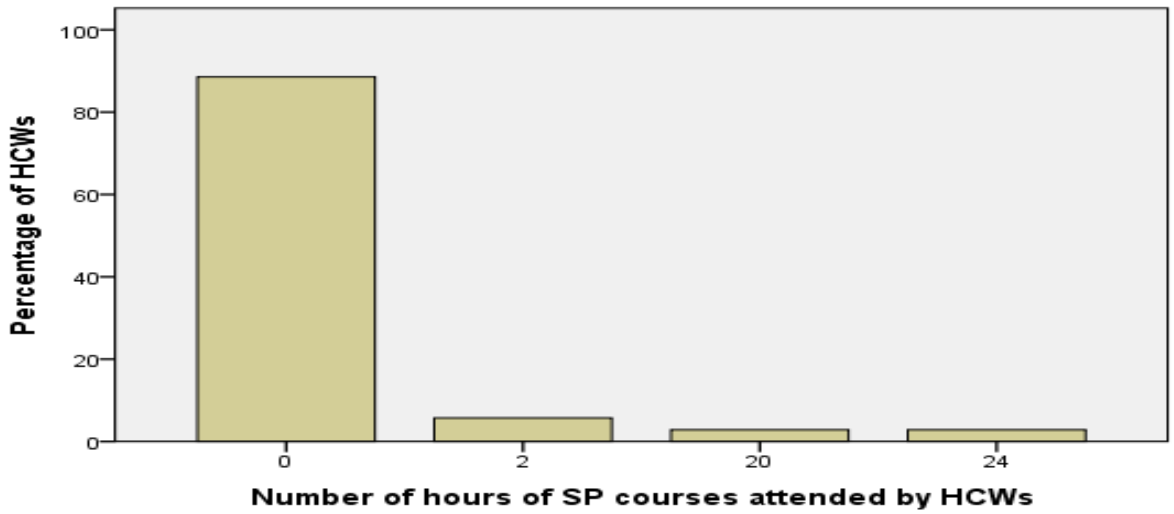

Figure 4.8: Percent distribution of number of hours of SP courses attended by HCWs of the emergency department in BPH, Gaborone, November 2012.

Table 4.32: Shows the frequency distribution of the number of hours worked per week by gender in PMH and BPH, Gaborone, November 2012.

Group Statistics

	FACILITY	N	Mean	Std. Deviation	Std. Error
NUMBER OF HRS WORKED IN A WEEK.	PMH	39	45.64	8.952	1.433
	BPH	35	47.14	2.328	.394

Hypothesis testing is done using independent samples t-test on equality of the two means of the number of hours worked per week by the HCWs in each hospital. There was no statistically significant difference between HCWs in PMH and BPH in the number of hours worked per week (t-value = -1.01, df=43.67, and p-value of 0.32). The means were 45.64 and 47.14 with SD of 8.85 and 2.33 for PMH and BPH respectively.Leven's Test for ER quality of variances was also done (p=0.000, F=17.911) (see Table 4.33).

Table 4.33: Describes SPSS independent samples t-test output on equality of the two means of the number of hours worked per week by the HCWs in each hospital (PMH and BPH) (Gaborone, November 2012)

PARAMETRICTEST-INDEPENDENT SAMPLES t–test (BETWEEN PMH AND BPH)

Independent Samples Test

	Levene's Test for Equality of Variances		**t-test for Equality of Means**						
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
Number of hrs worked in a week								Lower	Upper
Equal variances assumed	17.911	.000	-0.963	72	.339	-1.502	1.559	-4.610	1.607
Equal variances not assumed			-1.010	43.667	.318	-1.502	1.486	-4.498	1.495

Table 4.34: Shows frequency distribution of HCWs in the emergency department of both the PMH and BPH sources of awareness of SPs, Gaborone, November 2012.

How did you know about SPs?	Frequency		Percent (%)		Valid Percent		Cumulative Percent	
	PMH	BPH	PMH	BPH	PMH	BPH	PMH	BPH
At school	11	16	28.2	45.7	28.2	45.7	28.2	45.7
On job training	24	16	61.5	45.7	61.5	45.7	89.7	91.4
Others …	4	3	10.3	8.6	10.3	8.6	100.0	100.0
Total	39	35	100.0	100.0	100.0	100.0		

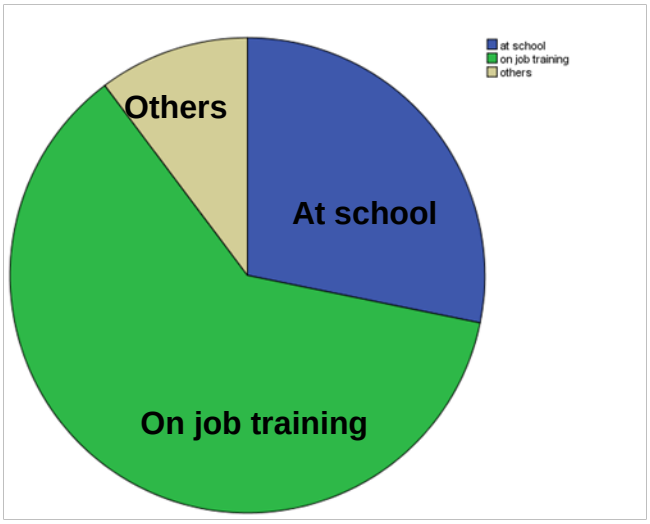

Figure4.9: Shows HCWs in the emergency department of PMHsources of awareness of SPs. Gaborone, November 2012.

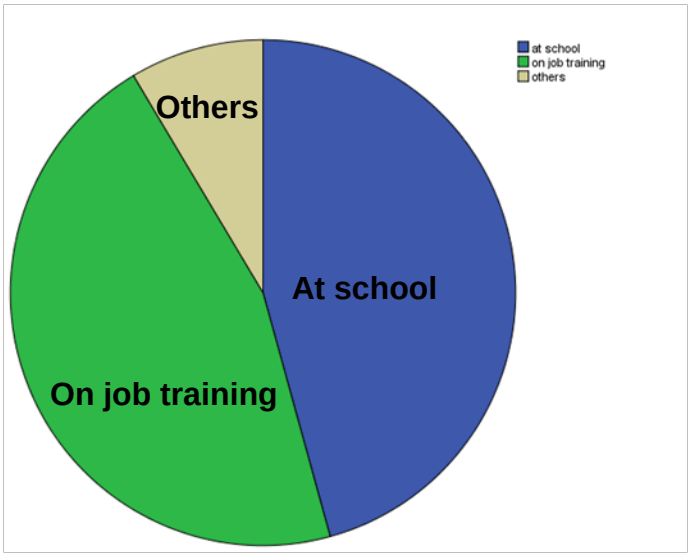

Figure4.10: ShowsHCWs in the emergency department of BPHsources of awareness of SPs. Gaborone, November 2012.

Table 4.35: Shows the frequency distribution of answers given by HCWs in the emergency department of both the PMH and BPH to the knowledge question relating to whether or notthey knew that they can transmit infections to patients, Gaborone, November 2012.

Do you know that you can transmit infections to patients?	Frequency		Percent (%)		Cumulative Percent	
	PMH	BPH	PMH	BPH	PMH	BPH
Yes	37	35	94.9	100	94.9	100
Not sure	2	0	5.1		100	100
No	0	0	0		100	100
Total	39	35	100.0	100.0		

Table 4.36: Shows the frequency distribution of answers given by HCWs in the emergency department of both the PMH and BPH to the knowledge question relating to whether or not they knew that they can contract infections from patients, Gaborone, November 2012.

Do you know that you can get infections from patients?	**Frequency**		**Percent (%)**		**Cumulative Percent**	
	PMH	**BPH**	**PMH**	**BPH**	**PMH**	**BPH**
Yes	38	35	97.4	100	97.4	100
Not sure	1	0	2.6	0	100	100
No	0	0	0	0	100	100
Total	39	35	100.0	100.0		

Table 4.37: Shows the frequency distribution of answers given by HCWs in the emergency department of both the PMH and BPH to the knowledge question relating to whether or not they have received any training on SPs in the last one year, Gaborone, November 2012.

Have you received any course regarding SPs in the last one year?	**Frequency**		**Percent (%)**		**Cumulative Percent**	
	PMH	**BPH**	**PMH**	**BPH**	**PMH**	**BPH**
Yes	15	8	38.5	22.9	38.5	22.9
Not sure	4	2	10.3	5.7	48.7	28.6
No	20	25	51.3	71.4	100	1000
Total	39	35	100.0	100.0		

Table 4.38: Shows the frequency distribution of answers given by HCWs in the emergency department of both the PMH and BPH to the knowledge question relating to whether or not their facility hasa clear IC policy, Gaborone, November 2012.

Does your facility have a clear Infection Control policy?	**Frequency**		**Percent (%)**		**Cumulative Percent**	
	PMH	**BPH**	**PMH**	**BPH**	**PMH**	**BPH**
Yes	26	21	66.7	60.0	66.7	60.0
Not sure	10	10	25.6	28.6	92.3	88.6
No	3	4	7.7	11.4	100	1000
Total	39	35	100.0	100.0		

Table 4.39: Shows the frequency distribution of answers given by HCWs in the emergencydepartment of both the PMH and BPH to the knowledge question relating to whether or nottheir facilityhas clear SP Guidelines, Gaborone, November 2012.

Does your facility have clear SP Guidelines?	**Frequency**		**Percent (%)**		**Cumulative Percent**	
	PMH	**BPH**	**PMH**	**BPH**	**PMH**	**BPH**
Yes	23	17	59.0	48.6	59.0	48.6
Not sure	16	16	41.0	45.7	100	94.3
No	0	2	0.0	5.7	100	1000
Total	39	35	100.0	100.0		

Table 4.40: Shows the frequency distribution of answers given by HCWs in the emergency department of both the PMH and BPH to the knowledge question relating to the best method of disinfecting clothes,linens and instruments, Gaborone, November 2012.

Which method is the best for disinfecting soiled linen, clothes, and instruments after use before they are re-used?	**Frequency**		**Percent (%)**		**Cumulative Percent**	
	PMH	**BPH**	**PMH**	**BPH**	**PMH**	**BPH**
Simple cleaning with water	2	1	5.1	2.9	5.1	2.9
Soaking in disinfection solutions	11	10	28.2	28.6	33.3	31.4
Sterilization	26	24	66.7	68.6	100	1000
Total	39	35	100.0	100.0		

Table 4.41: Shows the frequency distribution of answers given by HCWs in the emergency department of both the PMH and BPH to the attitude question relating to whether or not they can acquireinfections if they don't comply with SP Guidelines, Gaborone, November 2012.

You can acquire infections if you don't comply with SPs?	**Frequency**		**Percent (%)**		**Cumulative Percent**	
	PMH	**BPH**	**PMH**	**BPH**	**PMH**	**BPH**
Strongly disagree	3	2	7.7	5.7	7.7	5.7
Disagree	0	0	0.0	0	7.7	5.7
Neutral	2	0	5.1	0	12.8	5.7
Agree	12	6	30.8	17.1	43.6	22.9
Strongly agree	22	27	56.4	77.1	100.0	100
Total	39	35	100.0	100.0		

Table 4.42: Shows the frequency distribution of answers given by HCWs in the emergency department of both the PMH and BPH to the knowledge question relating to best method of disinfecting clothes,linens and instruments, Gaborone, November 2012.

What is your attitude as to the best method for disinfecting linen, clothes and instruments?	Frequency		Percent (%)		Cumulative Percent	
	PMH	BPH	PMH	BPH	PMH	BPH
Cleaning with water	1	2	2.6	5.7	2.6	5.7
Soaking in disinfection solutions	9	8	23.1	22.9	25.6	28.6
Sterilization	28	24	71.8	68.6	97.4	97.1
Other methods	1	1	2.6	2.9	100	100.0
Total	39	35	100.0	100.0		

Table 4.43: Shows the frequency distribution of answers given by HCWs in the emergency department of both the PMH and BPH to the practice question relating to whether or not they strictly follow SP Guidelines, Gaborone, November 2012.

When on duty I strictly follow SP Guidelines	Frequency		Percent (%)		Cumulative Percent	
	PMH	BPH	PMH	BPH	PMH	BPH
Never	1	0	2.6	0	2.6	0
Rarely	1	0	2.6	0	5.1	0
Occasionally	8	0	20.5	0	25.6	0
Sometimes	17	24	43.6	68.6	69.2	68.6
Always	12	11	30.8	31.4	100.0	100.0
Total	39	35	100.0	100.0		

Table 4.44: Shows the frequency distribution of answers given by HCWs in the emergency department of both the PMH and BPH to the practice question relating to why they are not always following SPGuidelines when on duty, Gaborone, November 2012.

If you are not always following SPs while on duty, why?	**Frequency**		**Percent (%)**		**Valid Percent**		**Cumulative Percent**	
	PMH	**BPH**	**PMH**	**BPH**	**PMH**	**BPH**	**PMH**	**BPH**
Lack of time	3	2	7.7	5.7	11.1	8.3	11.1	8.3
Lack of material	13	1	33.3	2.9	48.1	4.2	59.3	12.5
Emergency situation	6	15	15.4	42.9	22.2	62.5	81.5	75.0
Lack of knowledge	1	1	2.6	2.9	3.7	4.2	85.2	79.2
I forget	1	4	2.6	11.4	3.7	16.7	88.9	95.8
I don't have the knowledge	1	0	2.6	0	3.7	0	92.6	95.8
others	2	1	5.1	2.9	7.4	4.2	100.0	100.0
Total	27	24	69.2	68.6	100.0	100.0		
Missing System	12	11	30.8	31.4				
Total	39	35	100.0	100.0				

Table 4.45: Shows the frequency distribution of answers given by HCWs in the emergency department of both the PMH and BPH to the practice question relating to whether or not they wash their handswith soap and water before offering care to every patient, Gaborone, November 2012.

Do you wash your hands before attending to your patient using soap and water?	Frequency		Percent (%)		Cumulative Percent	
	PMH	BPH	PMH	BPH	PMH	BPH
Never	5	2	12.8	5.7	12.8	5.7
Rarely	0	0	0.0	0	12.8	5.7
Occasionally	10	5	25.6	14.3	38.5	20.0
Sometimes	14	22	35.9	62.9	74.4	82.9
Always	10	35	25.6	17.1	100.0	100.0
Total	39	35	100.0	100.0		

Table 4.46: Shows the frequency distribution of answers given by HCWs in the emergency department of both the PMH and BPH to the practice question relating to whether or not they wash their hands with soap and water after offering care to every patient, Gaborone, November 2012

Do you wash your hands after every patient with soap and water?	Frequency		Percent (%)		Cumulative Percent	
	PMH	BPH	PMH	BPH	PMH	BPH
Never	0	0	0.0	0	0.0	0
Rarely	0	0	0.0	0	0.0	0
Occasionally	8	2	20.5	5.7	20.5	5.7
Sometimes	10	14	25.6	40	46.2	45
Always	21	19	53.8	54.3	33.3	7
Total	39	35	100.0	100.0	100.0	100

Table 4.47: Shows the frequency distribution of answers given by HCWs in the emergency department of both the PMH and BPH to the practice question relating to whether or not they use gloves when attending to patients with blood and bodily fluids, Gaborone, November 2012.

Do you use gloves when attending to patients with blood and bodily fluids?	**Frequency**		**Percent (%)**		**Cumulative Percent**	
	PMH	**BPH**	**PMH**	**BPH**	**PMH**	**BPH**
Never	2	0	5.1	0	5.1	0
Rarely	0	0	0.0	0	5.1	0
Occasionally	2	1	5.1	2.9	10.3	2.9
Sometimes	2	1	5.1	2.9	15.4	5.7
Always	33	33	84.6	94.3	100.0	100
Total	39	35	100.0	100.0		

Table 4.48: Shows the frequency distribution of answers given by HCWs in the emergency department of both the PMH and BPH to the practice question relating to whether or not they wash their handsbefore putting on gloves, Gaborone, November 2012.

Do you wash your hands before putting on gloves?	**Frequency**		**Percent (%)**		**Cumulative Percent**	
	PMH	**BPH**	**PMH**	**BPH**	**PMH**	**BPH**
Never	10	6	25.6	17.1	25.6	17.1
Rarely	7	8	17.9	22.9	43.6	40.0
Occasionally	8	5	20.5	14.3	64.1	54.3
Sometimes	10	12	25.6	34.3	89.7	88.6
Always	4	4	10.3	11.4	100.0	100
Total	39	35	100.0	100.0		

Table 4.49: Shows the frequency distribution of answers given by HCWs in the emergency department of both the PMH and BPH to the practice question relating to whether or not they wash their handsafter removing gloves, Gaborone, November 2012.

Do you wash your hands after removing on gloves?	**Frequency**		**Percent (%)**		**Cumulative Percent**	
	PMH	**BPH**	**PMH**	**BPH**	**PMH**	**BPH**
Never	0	0	0.0	0	0.0	0
Rarely	2	0	5.1	0	5.1	0
Occasionally	2	2	5.1	5.7	10.3	5.9
Sometimes	7	9	17.9	25.7	28.2	32.4
Always	28	23	71.8	65.7	100	100.0
Total	39	34	100.0	97.1		
Missing	-	1	-	2.9		

Table 4.50: Shows the frequency distribution of answers given by HCWs in the emergency department of both the PMH and BPH on whether or not they have ever encountered NSSI within the last one year, Gaborone, November 2012.

Have you ever encountered NSSI within the last one year?	**Frequency**		**Percent (%)**		**Cumulative Percent**	
	PMH	**BPH**	**PMH**	**BPH**	**PMH**	**BPH**
Yes	9	11	23.1	31.4	23.1	31.4
Not sure	0	0	0.0	0	23.1	31.4
No	30	24	76.9	68.6	100	100.0
Total	39	35	100.0	100.0		

Table 4.51: Shows the frequency distribution of answers given by HCWs in the emergency department of both the PMH and BPH on the number of NSSIs encountered within the last one year, Gaborone, November 2012.

How many NSSIs have you encountered within the last one year, if any at all?	Frequency		Percent (%)		Valid Percent		Cumulative Percent	
	PMH	BPH	PMH	BPH	PMH	BPH	PMH	BPH
Once	7	11	17.9	31.4	77.8	100.0	77.8	100
Twice	2	0	5.1	0	22.2	0	100.0	100
Thrice	0	0	0.0	0	0.0	0	100.0	100
Total	9	11	23.1	31.4	100.0			
Missing System	30	24	76.9	68.6				
Total	39	35	100.0	100.0				

Table 4.52: Shows the frequency distribution of answers to the practice question given by HCWs in the emergency department of both the PMH and BPH relating to whether they recap used needles, Gaborone, November 2012.

Do you recap used needles?	Frequency		Percent (%)		Cumulative Percent	
	PMH	BPH	PMH	BPH	PMH	BPH
Never	22	22	56.4	62.9	56.4	62.9
Rarely	4	5	10.3	14.3	66.7	77.1
Occasionally	3	2	7.7	5.7	74.4	82.9
Sometimes	5	5	12.8	14.3	87.2	97.1
Always	5	1	12.8	2.9	100.0	100.0
Total	39	35	100.0	100.0		

Table 4.53: Shows the frequency distribution of answers to the practice question given by HCWs in the emergency department of both the PMH and BPH relating to whether they put on goggles when attending to an actively bleeding patient, Gaborone, November 2012.

Do you put on goggles when attending to an actively bleeding patient?	Frequency		Percent (%)		Cumulative Percent	
	PMH	BPH	PMH	BPH	PMH	BPH
Never	21	3	53.8	8.6	53.8	8.6
Rarely	4	2	10.3	5.7	64.1	14.3
Occasionally	2	6	5.1	17.1	69.2	31.4
Sometimes	7	16	17.9	45.7	87.2	77.1
Always	5	8	12.8	22.9	100.0	100
Total	39	35	100.0	100.0		

Table 4.54: Shows the frequency distribution of answers to the practice question given by HCWs in the emergency department of both the PMH and BPH relating to whether they put on ProtectiveGowns when attending to an actively bleeding patient, Gaborone, November 2012.

Do you put on protective gowns when attending to an actively bleeding patient?	Frequency		Percent (%)		Cumulative Percent	
	PMH	BPH	PMH	BPH	PMH	BPH
Never	5	1	12.8	2.9	12.8	2.9
Rarely	3	0	7.7	0	20.5	2.9
Occasionally	5	6	12.8	17.1	33.3	20.0
Sometimes	12	10	30.8	28.6	64.1	48.6
Always	14	18	35.9	51.4	100.0	100.0
Total	39	35	100.0	100.0		

Table 4.55: Shows the frequency distribution of answers to the practice question given by HCWs in the emergency department of both the PMH and BPH relating to whether they put on a mask when attending to an actively bleeding patient, Gaborone, November 2012.

Do you put on a mask when attending to an actively bleeding patient?	Frequency		Percent (%)		Cumulative Percent	
	PMH	BPH	PMH	BPH	PMH	BPH
Never	4	2	10.3	5.7	10.3	5.7
Rarely	5	2	12.8	5.7	23.1	11.4
Occasionally	6	9	15.4	25.7	38.5	37.1
Sometimes	16	15	41.0	42.9	79.5	80.0
Always	8	7	20.5	20.0	100.0	100.0
Total	39	35	100.0	100.0		

Table 4.56: Shows the frequency distribution of answers to the practice question given by HCWs inthe emergency department of both the PMH and BPH on how soiled linen, clothes and instruments were handled andtreated after use in their facility before reuse, Gaborone, November 2012.

How is soiled linen, clothes and instruments handled and treated after use in their facility before reuse?	**Frequency**		**Percent (%)**		**Cumulative Percent**	
	PMH	**BPH**	**PMH**	**BPH**	**PMH**	**BPH**
Simple cleaning with water	5	0	12.8	0	12.8	0
Soaking in disinfection solutions	6	9	15.4	25.7	28.2	25.7
Sterilization	25	21	64.1	60.0	92.3	85.7
Other	3	5	7.7	14.3	100.0	100.0
Total	39	35	100.0	100.0		

Table 4.57: Describes SPSS Spearman's rho correlation analysis to examine whether there is a relationship between knowledge of SPs and attitude towards SPs amongst the HCWs in the two hospitals (PMH and BPH), Gaborone, November 2012.

			KNOWLEDGE-SCALE YOUR KNOWLEDGE ABOUT SPs	**PRACTICE- I STRICTLY FOLLOW SP GUIDELINES**
Spearman's rho	KNOWLEDGE-SCALE YOUR KNOWLEDGE ABOUT SPs	Correlation Coefficient	1.000	0.221
		Sig. (2-tailed)	.	0.059
		N	74	74
	PRACTICE- I STRICTLY FOLLOW SP GUIDELINES	Correlation Coefficient	0.221	1.000
		Sig. (2-tailed)	0.059	.
		N	74	74

Spearman's rho correlation analysis was conducted to examine whether there is a relationship between knowledge and practice of SPs amongst the HCWs in the two hospitals. The results revealed a non-significant and positive relationship (r = 0.22, N = 74, p = 0.06) (see Table 4.57).

NON-PARAMETRIC TEST - SPEARMAN'S RHO CORRELATIONS (PMH AND BPH COMBINED)

Table 4.58: Describes SPSS Spearman's rho correlation analysis of the relationship between knowledge of and practice of SPs amongst HCWs in the two hospitals (PMH and BPH) (Gaborone, November 2012).

Correlations

			ATTITUDE - SPs ARE VERY IMPORTANT IN HEALTH CARE PROCEDURES	**PRACTICE - I STRICTLY FOLLOW SP GUIDELINES**
Spearman's rho	ATTITUDE - SPs ARE VERY IMPORTANT IN HEALTH CARE PROCEDURES	Correlation Coefficient	1.000	-0.007
		Sig. (2-tailed)	.	0.956
		N	74	74
	PRACTICE - I STRICTLY FOLLOW SP GUIDELINES	Correlation Coefficient	-0.007	1.000
		Sig. (2-tailed)	0.956	.
		N	74	74

A Spearman's rho correlation analysis was conducted to examine the relationship between attitudes towards SPs and practices of SPs amongst HCWs in the two hospitals combined. The results revealed a non-significant and negative relationship ($r = -0.007$, $N = 74$, $p = 0.96$) (see Table 4.58).

Table 4.59: Describes SPSS output of ranks score of knowledge of SPs, attitude towards SPs and practice of SPS among the HCWs in PMH and BPH, (Gaborone, November 2012).

NON-PARAMETRIC TEST BETWEEN TWO INDEPENDENT SAMPLES - MANN-WHITNEY TEST

Ranks

	FACILITY	N	Mean Rank	Sum of Ranks
KNOWLEDGE - SCALE YOUR KNOWLEDGE ABOUT SPs	PMH	39	38.13	1487.00
	BPH	35	36.80	1288.00
	Total	74		
ATTITUDE - SPs ARE VERY IMPORTANT IN HEALTH CARE PROCEDURES	PMH	39	34.04	1327.50
	BPH	35	41.36	1447.50
	Total	74		
PRACTICE - I STRICTLY FOLLOW SP GUIDELINES	PMH	39	34.31	1338.00
	BPH	35	41.06	1437.00
	Total	74		

Table 4.60: Describes SPSS output of Mann-Whitney test done on the sum of the ranks score of experience of NSSIs and the number of NSSIs encountered within the last one year among the HCWs in PMH and BPH, (Gaborone, November 2012).

	PRACTICE - EVER ENCOUNTERED NSSI LAST 1 YEAR?	PRACTICE - IF ANY NSSI IN THE LAST 1 YEAR, HOW MANY TIMES?
Mann-Whitney U	625.500	38.500
Wilcoxon W	1255.500	104.500
Z	-0.802	-1.606
Asymp. Sig. (2-tailed)	0.422	0.108
Exact Sig. [2*(1-tailed Sig.)]		0.412[b]

a. Grouping Variable: FACILITY

b. Not corrected for ties.

There is no statistically significant difference between PMH and BPH at the 0.05 level when it comes to NSSIs and recapping behaviour of the HCWs using the Mann-Whitney test for two independent samples test (Table 4.60).

Table 4.61: Describes SPSS Spearman's rho correlation analysis to examine relationships between recapping and NSSIs amongst the HCWs in BPH, (Gaborone, November 2012).

Nonparametric Correlations - BPH - recapping VS NSSIs

Correlations

			PRACTICE - EVER ENCOUNTERED NSSI LAST 1 YEAR?	**PRACTICE - DO YOU RECAP USED NEEDLES?**
Spearman's rho	PRACTICE - EVER ENCOUNTERED NSSI LAST 1 YEAR?	Correlation Coefficient	1.000	0.145
		Sig. (2-tailed)	.	0.407
		N	35	35
	PRACTICE - DO YOU RECAP USED NEEDLES?	Correlation Coefficient	0.145	1.000
		Sig. (2-tailed)	0.407	.
		N	35	35

A Spearman's rho correlation analysis was conducted to examine whether there is a relationship between recapping of needles and NSSIs amongst the HCWs in BPH. The results revealed a non-significant and positive relationship ($r = 0.145$, $N = 35$, $p = 0.41$) at the 0.05 level (see Table 4.61).

Figure 4. 62: Describes SPSS Spearman's rho correlation analysis to examine whether there is a relationship between recapping and NSSIs amongst the HCWs in PMH, (Gaborone, November 2012).

Nonparametric Correlations - PMH - recapping vs NSSIs

Correlations

			PRACTICE - EVER ENCOUNTERED NSSI LAST 1 YEAR?	**PRACTICE - DO YOU RECAP USED NEEDLES?**
Spearman's rho	PRACTICE - EVER ENCOUNTERED NSSI LAST 1 YEAR?	Correlation Coefficient	1.000	-0.201
		Sig. (2-tailed)	.	0.221
		N	39	39
	PRACTICE - DO YOU RECAP USED NEEDLES?	Correlation Coefficient	-0.201	1.000
		Sig. (2-tailed)	0.221	.
		N	39	39

A Spearman's rho correlation analysis was conducted to examine whether there is a relationship between recapping and NSSIs amongst the HCWs in the PMH. The results revealed a non-significant and negative relationship (r = -0.201, N = 39, p = 0.22) at the 0.05 level (see Table 4.62)

Nonparametric Correlations (PMH)

Similar Spearman's rho correlation analysis was conducted to examine whether there are relationships between knowledge of SPs, attitude towards SPs and practice of SPs on one hand and levels of education, job title, hours of SP courses attended, hours of clinical work per week on the other hand amongst the HCWs in PMH. A significant and positive relationship between knowledge of SPs and practice of SPs (r=0.37, N=39, p=0.02) at the

0.05 level was found. A significant and positive relationship between knowledge of SPs and level of education was also found (r=0.56, N=39, p=0.000) at the 0.01 level. The analysis also showed a significant and positive relationship between knowledge of SPs and job title (r=-0.36, N=39, p=0.03) at the 0.05 level. On the other hand the Spearman's rho correlation analysis showed a significant and positive relationship between knowledge of SPs and number of hours of clinical practice per week (r=0.44, N=39, p=0.006) at the 0.01 level.

Figure 4. 63: Shows the frequency distribution of answers to the practice question given by HCWs in the emergency department of BPH on how soiled linen, clothes and instruments were handled and treated after use in their facility before reuse, Gaborone, November 2012.

Nonparametric Correlations (PMH ONLY)

Correlations

			KNOWLEDGE - SCALE YOUR KNOWLEDGE ABOUT SPs	PRACTICE - I STRICTLY FOLLOW SP GUIDELINES
Spearman's rho	KNOWLEDGE - SCALE YOUR KNOWLEDGE ABOUT SPs	Correlation Coefficient	1.000	0.368*
		Sig. (2-tailed)	.	0.021
		N	39	39
	PRACTICE - I STRICTLY FOLLOW SP GUIDELINES	Correlation Coefficient	0.368*	1.000
		Sig. (2-tailed)	0.021	.
		N	39	39

*. Correlation is significant at the 0.05 level (2-tailed).

A Spearman's rho correlation analysis was conducted to examine whether there is a relationship between recapping and NSSIs amongst the HCWs in the two hospitals combined. The results revealed a non-significant and positive relationship (r = 0.368, N = 39, p = 0.021) (see Table 4.63).

Figure 4. 64: Describes SPSS Spearman's rho correlation analysis to examine whether there was a relationship between knowledge of SPs and practice of SPs amongst the HCWs in PMH, (Gaborone, Nov 2012).

Nonparametric Correlations (PMH ONLY)

Correlations

			ATTITUDE - SPs ARE VERY IMPORTANT IN HEALTH CARE PROCEDURES.	**PRACTICE - I STRICTLY FOLLOW SP GUIDELINES**
Spearman's rho	ATTITUDE - SPs ARE VERY IMPORTANT IN HEALTH CARE PROCEDURES.	Correlation Coefficient	1.000	0.032
		Sig. (2-tailed)	.	0.846
		N	39	39
	PRACTICE - I STRICTLY FOLLOW SP GUIDELINES	Correlation Coefficient	0.032	1.000
		Sig. (2-tailed)	0.846	.
		N	39	39

A Spearman's rho correlation analysis was conducted to examine whether there was a relationship between knowledge of SPs and practice of SPs amongst the HCWs in PMH. The results revealed a significant and positive relationship ($r = 0.032$, $N = 39$, $p = 0.85$) at the 0.05 level (see Table 4.64).

Figure 4. 65:Describes SPSS Spearman's rho correlation analysis to examine whether there was a relationship between recapping and NSSIs amongst the HCWs in PMH, (Gaborone, November 2012).

Nonparametric Correlations - PMH - recapping vs NSSIs

Correlations

			PRACTICE - EVER ENCOUNTERED NSSI LAST 1 YEAR?	**PRACTICE - DO YOU RECAP USED NEEDLES?**
Spearman's rho	PRACTICE - EVER ENCOUNTERED NSSI LAST 1 YEAR?	Correlation Coefficient	1.000	-0.201
		Sig. (2-tailed)	.	0.221
		N	39	39
	PRACTICE - DO YOU RECAP USED NEEDLES?	Correlation Coefficient	-0.201	1.000
		Sig. (2-tailed)	0.221	.
		N	39	39

A Spearman's rho correlation analysis was conducted to examine whether there was a relationship between recapping and NSSIs amongst the HCWs in the PMH. The results revealed a non-significant and negative relationship ($r = -0.201$, $N = 39$, $p = 0.22$) at the 0.05 level (see Table 4.65)

Figure 4. 66:Describes SPSS Spearman's rho correlation analysis to examine whether there was a relationship between their attitude towards SPs and practice of SPs amongst the HCWs in PMH, (Gaborone, November 2012).

NON-PARAMETRIC TEST - SPEARMAN'S RHO CORRELATIONS (BPH)

Nonparametric Correlations (PMH ONLY)

Correlations

			KNOWLEDGE - SCALE YOUR KNOWLEDGE ABOUT SPs	ATTITUDE - SPs ARE VERY IMPORTANT IN HEALTH CARE PROCEDURES.
Spearman's rho	KNOWLEDGE - SCALE YOUR KNOWLEDGE ABOUT SPs	Correlation Coefficient	1.000	-0.001
		Sig. (2-tailed)	.	0.994
		N	35	35
	ATTITUDE - SPs ARE VERY IMPORTANT IN HEALTH CARE PROCEDURES.	Correlation Coefficient	-0.001	1.000
		Sig. (2-tailed)	0.994	.
		N	35	35

A Spearman's rho correlation analysis was conducted to examine whether there was a relationship between attitude towards and practice of SPs amongst the HCWs in PMH. The results revealed a non-significant and negative relationship (r = -0.001, N = 39, p = 0.99) at the 0.05 level (see table 4.66).

Nonparametric Correlations (PMH)

Similar Spearman's rho correlation analysis was conducted to examine whether there were relationships between knowledge of SPs, attitude towards SPs and practice of SPs on one hand and levels of education, job title, hours of SP courses attended, hours of clinical work per week on the other hand amongst the HCWs in PMH, a significant and positive relationship between knowledge of SPs and practice of SPs was revealed (r=0.37, N=39, p=0.02) at the 0.05 level. Noted was a significant and positive relationship between knowledge of SPs and level of education (r=0.56, N=39, p=0.000) at the 0.01 level. The analysis also showed that there was a significant and positive relationship between knowledge of SPs and job title (r=-0.36, N=39, p=0.03) at the 0.05 level. On the other hand the Spearman's rho correlation analysis showed a significant and positive relationship

between knowledge of SPs and number of hours of clinical practice per week (r=0.44, N=39, p=0.006) at the 0.01 level.

Figure 4. 67: Describes SPSS Spearman's rho correlation analysis to examine whether there was a relationship between knowledge of SPs and attitude towards SPs amongst the HCWs in BPH,(Gaborone, Nov 2012).

Nonparametric Correlations (BPH ONLY)

Correlations

			KNOWLEDGE - SCALE YOUR KNOWLEDGE ABOUT SPs	**PRACTICE - I STRICTLY FOLLOW SP GUIDELINES**
Spearman's rho	KNOWLEDGE - SCALE YOUR KNOWLEDGE ABOUT SPs	Correlation Coefficient	1.000	-0.011
		Sig. (2-tailed)	.	0.951
		N	35	35
	PRACTICE - I STRICTLY FOLLOW SP GUIDELINES	Correlation Coefficient	0.011	1.000
		Sig. (2-tailed)	0.951	.
		N	35	35

A Spearman's rho correlation analysis was conducted to examine the possibility of a relationship between knowledge of SPs and their attitude towards SPs amongst the HCWs in BPH. The results revealed a non-significant and negative relationship (r = -0.011, N = 35, p = 1.00) at the 0.05 level (see Table 4.67).

Figure 4. 68: Describes SPSS Spearman's rho correlation analysis to examine whether there was a relationship between knowledge of SPs and practice of SPs amongst the HCWs in BPH, (Gaborone, November 2012).

Nonparametric Correlations (BPH ONLY)

Correlations

			ATTITUDE - SPs ARE VERY IMPORTANT IN HEALTH CARE PROCEDURES.	**PRACTICE - I STRICTLY FOLLOW SP GUIDELINES**
Spearman's rho	ATTITUDE - SPs ARE VERY IMPORTANT IN HEALTH CARE PROCEDURES.	Correlation Coefficient	1.000	-0.162
		Sig. (2-tailed)	.	0.352
		N	35	35
	PRACTICE - I STRICTLY FOLLOW SP GUIDELINES	Correlation Coefficient	-0.162	1.000
		Sig. (2-tailed)	0.352	.
		N	35	35

A Spearman's rho correlation analysis was conducted to examine whether there was a relationship between knowledge and practice of SPs amongst the HCWs in BPH. The results revealed a non-significant and negative relationship ($r = -0.16$, $N = 35$, $p = 0.35$) at the 0.05 level (see Table 4.68).

Figure 4. 69: Describes SPSS Spearman's rho correlation analysis to examine whether there was a relationship between their attitude towards SPs and practice of SPs amongst the HCWs in PMH, (Gaborone, November 2012).

Nonparametric Correlations - BPH - recapping VS NSSIs

Correlations

			PRACTICE - EVER ENCOUNTERED NSSI LAST 1 YEAR?	**PRACTICE - DO YOU RECAP USED NEEDLES?**
Spearman's rho	PRACTICE - EVER ENCOUNTERED NSSI LAST 1 YEAR?	Correlation Coefficient	1.000	0.145
		Sig. (2-tailed)	.	0.407
		N	35	35
	PRACTICE - DO YOU RECAP USED NEEDLES?	Correlation Coefficient	0.145	1.000
		Sig. (2-tailed)	0.407	.
		N	35	35

A Spearman's rho correlation analysis was conducted to examine whether there was a relationship between attitudes towards and practices of SPs amongst the HCWs in BPH. The results revealed a non significant and positive relationship ($r = 0.15$, $N = 35$, $p = 0.41$) at the 0.05 level (see Table 4.69).

Figure 4. 70: Describes SPSS output of ranks score of knowledge of SPs, attitude towards SPs and practice of SPS among the HCWs in PMH and BPH, (Gaborone, November 2012).

NON-PARAMETRIC TEST BETWEEN TWO INDEPENDENT SAMPLES - MANN-WHITNEY TEST

Ranks

	FACILITY	N	Mean Rank	Sum of Ranks
KNOWLEDGE - SCALE YOUR KNOWLEDGE ABOUT SPs	PMH	39	38.13	1487.00
	BPH	35	36.80	1288.00
	Total	74		
ATTITUDE - SPs ARE VERY IMPORTANT IN HEALTH CARE PROCEDURES	PMH	39	34.04	1327.50
	BPH	35	41.36	1447.50
	Total	74		
PRACTICE - I STRICTLY FOLLOW SP GUIDELINES	PMH	39	34.31	1338.00
	BPH	35	41.06	1437.00
	Total	74		

Nonparametric Correlations (BPH)

Similar Spearman's rho correlation analysis was conducted to examine whether there were relationships between knowledge of SPs, attitude towards SPs, practice of SPs on one hand and levels of education, job title, hours of SP courses attended, hours of clinical work per week on the other hand amongst the HCWs in BPH. Unlike the results of PMH, this analysis revealed non-significant relationships.

Figure 4. 71: Describes SPSS output of Mann-Whitney test done on the sum of the ranks score of knowledge of SPs, attitude towards SPs and practice of SPS among the HCWs in PMH and BPH, (Gaborone, November 2012).

Test Statistics[a]

	KNOWLEDGE - SCALE YOUR KNOWLEDGE ABOUT SPs	ATTITUDE - SPs ARE VERY IMPORTANT IN HEALTH CARE PROCEDURES	PRACTICE - I STRICTLY FOLLOW SP GUIDELINES
Mann-Whitney U	658.000	547.500	558.000
Wilcoxon W	1288.000	1327.500	1338.000
Z	-.309	-1.697	-1.508
Asymp. Sig. (2-tailed)	.757	.090	.132

a. Grouping Variable: FACILITY

Mann-Whitney test for two independent samples comparing knowledge of SPs, attitude towards SPs and practice of SPs in between PMH and BPH – no statistically significant difference at the 0.05 level between the HCWs in PMH and BPH in relation to knowledge of SPs, attitude towards SPs and practice of SPs at the 0.05 level (see Tables 4.70 and 4.71).

Figure 4. 72: Describes SPSS output of Mann-Whitney test done on the sum of the ranks score of experience of NSSIs and the number of NSSIs encountered within the last one year among the HCWs in PMH and BPH, (Gaborone, November 2012).

Test Statistics[a]

	PRACTICE - EVER ENCOUNTERED NSSI LAST 1 YEAR?	PRACTICE - IF ANY NSSI IN THE LAST 1YEAR , HOW MANY TIMES?
Mann-Whitney U	625.500	38.500
Wilcoxon W	1255.500	104.500
Z	-.802	-1.606
Asymp. Sig. (2-tailed)	.422	.108
Exact Sig. [2*(1-tailed Sig.)]		.412[b]

a. Grouping Variable: FACILITY

b. Not corrected for ties.

There was no statistically significant difference between PMH and BPH at the 0.05 level in relation to NSSIs and recapping behaviour of the HCWs using the Mann-Whitney test for two independent samples test (see Tables 4.72 and 4.73).

Figure 4. 73: Describes SPSS output of ranks score of knowledge of SPs, attitude towards SPs and practice of SPs amongst GPs and RNs in the two hospitals combined, (Gaborone, November 2012).

Ranks

	JOB TITLE	N	Mean Rank	Sum of Ranks
KNOWLEDGE - SCALE YOUR KNOWLEDGE ABOUT SPs	GPs	17	26.68	453.50
	RNs	38	28.59	1086.50
	Total	55		
ATTITUDE - SPs ARE VERY IMPORTANT IN HEALTH CARE PROCEDURES	GPs	17	26.21	445.50
	RNs	38	28.80	1094.50
	Total	55		
PRACTICE - I STRICTLY FOLLOW SP GUIDELINES	GPs	17	23.00	391.00
	RNs	38	30.24	1149.00
	Total	55		

Figure 4.74: Describes SPSS output of Mann-Whitney test done on the sum of the ranks score of knowledge of SPs, attitude towards SPs and practice of SPs amongst GPs and RNs in the two hospitals (PMH and BPH) combined, (Gaborone, November 2012).

Test Statistics[a]

	KNOWLEDGE - SCALE YOUR KNOWLEDGE ABOUT SPs	ATTITUDE - SPs ARE VERY IMPORTANT IN HEALTH CARE PROCEDURES	PRACTICE - I STRICTLY FOLLOW SP GUIDELINES
Mann-Whitney U	300.500	292.500	238.000
Wilcoxon W	453.500	445.500	391.000
Z	**-0.486**	**-0.659**	**-1.718**
Asymp. Sig. (2-tailed)	**0.627**	**0.510**	**0.086**

a. Grouping Variable: JOB TITLE

The Mann-Whitney test in between GPs and RNs in the two hospitals showed that there was no statistically significant difference at the 0.05 level between these two groups of HCWs in relation to knowledge of SPs, attitude towards SPs and practice of SPs (see Tables 4.74).

Figure 4.75: Describes SPSS output of ranks score of knowledge of SPs, attitude towards SPs and practice of SPs amongst RNs and HCAs in the two hospitals combined, (Gaborone, November 2012).

Ranks

	JOB TITLE	N	Mean Rank	Sum of Ranks
KNOWLEDGE - SCALE YOUR KNOWLEDGE ABOUT SPs	RNs	38	30.95	1176.00
	HCAs	17	21.41	364.00
	Total	55		
ATTITUDE - SPs ARE VERY IMPORTANT IN HEALTH CARE PROCEDURES	RNs	38	29.39	1117.00
	HCAs	17	24.88	423.00
	Total	55		
PRACTICE - I STRICTLY FOLLOW SP GUIDELINES	RNs	38	29.72	1129.50
	HCAs	17	24.15	410.50
	Total	55		

Test Statistics[a]

	KNOWLEDGE - SCALE YOUR KNOWLEDGE ABOUT SPs	ATTITUDE - SPs ARE VERY IMPORTANT IN HEALTH CARE PROCEDURES	PRACTICE - I STRICTLY FOLLOW SP GUIDELINES
Mann-Whitney U	211.000	270.000	257.500
Wilcoxon W	364.000	423.000	410.500
Z	-2.357	-1.120	-1.318
Asymp. Sig. (2-tailed)	0.018	0.263	0.187

a. Grouping Variable: JOB TITLE

Figure 4. 76: Describes SPSS output of Mann-Whitney test done on the sum of the ranks score of knowledge of SPs, attitude towards SPs and practice of SPs amongst GPs and RNs in the two hospitals (PMH and BPH) combined, (Gaborone, November 2012).

The Mann-Whitney test between RNs and HCAs showed that there was no statistically significant difference between RNs and HCAs in relation to attitude towards SPs and practice of SPs. But there was statistically significant difference between RNs and HCAs when in relation to knowledge about SPs (N=55, Z=-2.357, p=0.018) at a level of 0.05(see Tables 4.76and 4.77).

Figure 4. 77: Describes SPSS output of ranks score of knowledge of SPs, attitude towards SPs and practice of SPs amongst GPs and HCAs in the two hospitals combined, (Gaborone, November 2012).

Ranks

	JOB TITLE	N	Mean Rank	Sum of Ranks
KNOWLEDGE - SCALE YOUR KNOWLEDGE ABOUT SPs	GPs	17	19.76	336.00
	HCAs	17	15.24	259.00
	Total	34		
ATTITUDE - SPs ARE VERY IMPORTANT IN HEALTH CARE PROCEDURES	GPs	17	17.94	305.00
	HCAs	17	17.06	290.00
	Total	34		
PRACTICE - I STRICTLY FOLLOW SP GUIDELINES	GPs	17	17.00	289.00
	HCAs	17	18.00	306.00
	Total	34		

Table 4.78: Describes SPSS output for the Sum of Ranks for knowledge of SPs, attitude towards SPs and practice of SPs amongst male and female HCWs in the two hospitals combined, (Gaborone, November 2012).

Ranks

	SEX	N	Mean Rank	Sum of Ranks
KNOWLEDGE - SCALE YOUR KNOWLEDGE ABOUT SPs	male	28	36.84	1031.50
	female	46	37.90	1743.50
	Total	74		
ATTITUDE - SPs ARE VERY IMPORTANT IN HEALTH CARE PROCEDURES	male	28	37.54	1051.00
	female	46	37.48	1724.00
	Total	74		
PRACTICE - I STRICTLY FOLLOW SP GUIDELINES	male	28	36.45	1020.50
	female	46	38.14	1754.50
	Total	74		

Table 4.79: Describes SPSS output of Mann-Whitney test done on the sum of the ranks score of knowledge of SPs, attitude towards SPs and practice of SPs amongst GPs and HCAs in the two hospitals (PMH and BPH) combined, (Gaborone, November 2012).

Test Statistics[a]

	KNOWLEDGE - SCALE YOUR KNOWLEDGE ABOUT SPs	ATTITUDE - SPs ARE VERY IMPORTANT IN HEALTH CARE PROCEDURES	PRACTICE - I STRICTLY FOLLOW SP GUIDELINES
Mann-Whitney U	625.500	643.000	614.500
Wilcoxon W	1031.500	1724.000	1020.500
Z	-0.241	-0.013	-0.368
Asymp. Sig. (2-tailed)	0.810	0.990	0.713

a. Grouping Variable: SEX

The Mann-Whitney test in between GPs and HCAs showed that there is no statistically significant difference between GPs and HCAs in relation to knowledge about SPs, attitude towards SPs and practice of SPs between the two groups (see Tables 4.78 and 4.79).

Apparently, there wasno statistically significant difference between male and female in relation to knowledge of SPs, attitude towards SPs and practice of SPs at the 0.05 level among HCWs of the two hospitals (PMH and BPH) combined (see 4.78 and 4.79).

Table 4.80: Describes SPSS output for the Sum of Ranks of goggle putting behaviour of HCWs in PMH and BPH when they attend to actively bleeding patients (Gaborone, November 2012).

Ranks

	FACILITY	N	Mean Rank	Sum of Ranks
PRACTICE - DO YOU PUT ON GOGGLES WHEN ATTENDING TO AN ACTIVELY BLEEDING PT?	PMH	39	29.01	1131.50
	BPH	35	46.96	1643.50
	Total	74		

Table 4.81: Describes SPSS output of Mann-Whitney test done on the Sum of Ranks of goggle putting behaviour of the HCWs in PMH and BPH when they attend to actively bleeding patients, Gaborone, November 2012.

Test Statistics[a]

	PRACTICE - DO YOU PUT ON GOGGLES WHEN ATTENDING TO AN ACTIVELY BLEEDING PT?
Mann-Whitney U	351.500
Wilcoxon W	1131.500
Z	-3.718
Asymp. Sig. (2-tailed)	0.000

a. Grouping Variable: FACILITY

Similar Mann-Whitney tests were done comparing the HCWs in the two facilities on the practice behaviour of: hands washing before and/or after every patient, hand washing before putting on and/or after removing hand gloves and putting on hand gloves, goggles, protective gowns, and/or masks when attending to actively bleeding patients. There was no significant difference in these practices between HCWs of PMH and BPH except for goggle putting practice when attending to actively bleeding patients. This practice behaviour significantly differs among the HCWs in the two hospitals (N=74, Z=-3.718, p=0.000) at a level of 0.01. The HCWs in BPH seem to practice it better than their PMH counterparts. (see the above Tables 4.80 and 4.81).

Using Mann-Whitney test, it was found that there was no significant difference at the 0.05 level in the HCWs between PMH and BPH in relation to knowledge of whether or not they know that they can contract infections from or transmit infections to patients if they don't adhere to SPs. There was no significant knowledge difference at the 0.05 level in relation to which method is the best to disinfect soiled linen, clothes and instruments. There was also no significant difference at the 0.05 level in their attitude towards which method is the best to disinfect soiled linen, clothes and instruments. There was no significant difference at the 0.05 level in their attitude towards acquiring infections from patients if they don't adhere to SPs.

4.4 OVERVIEW OF THE RESEARCH FINDINGS

An equal and significant percentage of HCWs (77%) in both of the studied hospitals reported to have adequate knowledge of SPs. Most of these HCWs, particularly those in PMH claimed to have learnt about SPs through experience of working in the clinical areas. It is apparent from the outcome of the study that learning was mainly from clinical experience, not by attending formal educational courses or workshops. Over half of HCWs from PMH agreed with this and stated that they did notattend educational course on SPs in the last year. This was even more of a problem for those in BPH, with less than 30 failed to attend training on SPs in the last year. Despite this, it was evident that there was awareness among HCWs of the mode of transmission of infection in clinical practice. All of the HCWs in BPH and over 94% of those PMH were aware that they can transmit infections to their patients and can also contract infections from them. Such a heightened

awareness resulted in the quest for the HCWs to practice SPs and adhere to the standards outlined in policies such as those which relate to infection control and SP guidelines.

HCWs of both hospitals noted very clearly the presence of SP guidelines and infection control policies in their respective clinical settings. Approximately 60% of HCWs in PMH clearly indicated that this setting had both infection control policy, which they considered robust as they claimed that these structures enabled them to safely apply SPs. Similar outcomes, although slightly less for infection control polices, were observed among HCWs of BPH. Even though they were the HCWs` views, it was evident that the hospitals had clear policies and guidelines infection control and SPs practice. Acknowledging this, it was not surprising for HCWs to reveal good SPs practices despite some slight variations between the hospitals. It is thus critical at this stage to offer specific accounts of SPs practice in the studied hospitals to illustrate the variations even though they may not be perceived as significant.

Starting with hand washing behaviour, it was consistently revealed that this was performed after attending to or meeting patients` care needs as over 50% of HCWs of both hospitals reported this. With regard to hand washing before attending to patients` care needs, a worrying picture was unveiled, as less that 30% of HCWs from both hospitals claimed that they did so. The outcome was more worrying when individual hospitals were analysed. Less than 20% of HCWs in BPH reported to wash their hands before offering care. This debate is never going to be complete if other areas of SPs practice are not discussed, even if they are offered in relation to hand washing.

The use of gloves, in other words, putting on gloves, appeared to be an acceptable and safe practice of SPs, as over 80% of HCWs of both hospitals, although more for BPH, stated that they put on gloves whilst attending to patients with blood and bodily fluids. The trigger for this heightened adherence to this specific SP practice could be the presence of fluids and associated risk of contracting infections. The thoughts of risk of infection were noted by the researcher of this to study to play a massive role in influencing HCWs SPs practice behaviours. This was apparently the case as evident in the outcomes of this study, as only about 12% of HCWs of the hospitals reported to wash their hands before putting on

gloves. Such an outcome is attributable to the feeling of being safe in the sense that HCWs may feel less likely to transmit infections to patients or contract infections from them. Thus, they may not see the need to wash their hands before putting on gloves. If this is the case, the question now arises, why should HCWs wash their hands after removing gloves considering that they may be less worried about risk of transmission or contracting of infections? Although this is a valid question that deserves a response, it is beyond the remit of this study. Despite this, a brief response may help to take the debate further. The washing of hands following glove use could be reaction to some forms of risks, which could be irritation or the need to wash off the “powder”. About 70% of HCWs claimed that they washed their hands after using gloves. This is quite significant and could a function of the rationale provided above or could be responses to NNSI.

Although they were reported to be less frequent, NSSIs were frequently talked about by HCWs, probably because of the perceived degree of risk involved in contracting or transmitting infections. Even though less than 30% of all HCWs respondents claimed to have encountered some forms of NSSIs, the incidents of these were reported to occur more in PMH. This is probable because of the frequency of recapping behaviours reported by HCWs of PMH. About half of the HCWs in this care setting claimed that they never recapped used needles. The question one could now ask is that what about the other half? Though this query may not have been answered by some respondents, there was the possibility of about 30% or more of HCWs in the hospitals studied to have recapped needles after use.

Associated with NSSIs is the issue of sterilisation. A significant proportion of HCWs from both hospitals (over 60%), PMH and BPH were of the view that sterilisation is the most effective method for disinfecting equipment. Having such views may promote the application of sterilisation practices. Apparently, this was the case, as over 60% of HCWs in PMH and BPH claimed that it was their daily practice at work. This indicates that there were HCWs who were not routinely engage in disinfection practices. Not engaging in disinfection practices or lack of consistent application of the same were functions of a number of factors. Examples of these factors include lack of time, limited resources or lack

of it and forgetfulness. Lack of time was a critical factor for HCWs in BPH, as over 60% of them admitted to this.

4.5 CONCLUSION

This chapter has presented very interesting findings of the study. Specifically, it illustrated SPs practices and infection control of HCWs of two hospitals, private and public in Botswana. In fact the chapter made an attempt to indicate the differences in the SPs practices between groups of HCWs in the two hospitals. A close analysis of the results suggest the need for HCWs to engage in SPs practices for their benefits as well as the patients they care for. The next chapter focuses on the conclusions of the study including recommendations for improvement.

CHAPTER 5 CONCLUSIONS AND RECOMMENDATIONS

5.1 INTRODUCTION

The study has pursued two distinct but inter-related aims. It examined adherence to SPs practices by HCWs of two hospitals, one privately owned and the other funded by the Government of Botswana. The study also aimed to utilise its findings to enable policy makers to develop guidelines for improving SPs practices. This is the final chapter of this study and thus offers a summative conclusion of its findings. Included in this chapter are also the study limitations and recommendations for further research and practice.

5.2 RESEARCH DESIGN AND METHOD

A non-experimental descriptive quantitative study design with a cross-sectional dimension was used to assess adherence to SPs of HCWs in two hospitals,PMH and BPH, in Gaborone, Botswana.HCWs in the Emergency Departmentsof these hospitals formed the target population, and those who met the inclusion criteria were conveniently selected from this population for participation in the study. A total sample of size of 74 HCWs was used in the study. Data was collected from this sample with the use ofaself-administered questionnaire. The questionnaire was subjected to a preliminary investigation (pilot) and suggestions for improvement received were incorporated to enhance its efficacy. The final versioncontained questions that required specific answers from pre-designated response options. Itcontained different sections with specific questions for exploring knowledge, attitudes and adherence patterns of HCWsto SP. This approach to data collection was deemed appropriate for meeting both the aim and objectives of this study.

5.3 SUMMARY AND INTERPRETATION OF THE RESEARCH FINDINGS

A number of statistical tests were applied during data analysis. An example of these was Mann-Whitney test. Using this test for two independent sample variables revealed no statistically significant difference in knowledge of SPs, attitudes towards and practice of SPs between HCWs in PMH and BPH. The same test was applied to NSSIs and recapping behaviours. It also unveiled a no significant difference outcome between the two

groups(HCWs in PMH and BPH) in relation to NSSIs and recapping behaviour. Similar outcomes were also noted when the data were subjected to Fisher's Exact test. However, this test revealed a significant outcome of SPs practices. Good practice of SPs was noted to be significantly better amongst HCWs in PMH relative to those in BPH.Data were also subjected to Independent sample T-test. With regard to this, no significant difference was observed between HCWs in the two hospitals in relation to the number of hours worked per week. In addition to these tests, the research felt that it was critical to explore possible relationships between variables in the study.

Spearman's rho correlation test showed that there were no correlational relationships between knowledge, attitude and practice patterns of SPs amongstHCWs in the two hospitals. This simply means that a none-relationship was detected, indicating that the attributes noted did not have any relational effect on each other. The same test, Spearman's rho correlation, was applied on NSSIs and recapping behaviours. Again, a none-relationship was observed between NSSIs and recapping amongst HCWs in the two hospitals. However, a different picture was revealed whenSpearman's rho correlation test was applied on "better knowledge of SPs" and other attributes, such as good practice, level of education, number of hours worked per week amongst HCWs. A positive correlation was observed between "better knowledge of SPs" and these attributes amongst HCWs in PMH. In contrast, a none-relationship was observed between "better knowledge of SPs" and the attributes named above amongst HCWs of BPH.

Fisher's Exact Test was performed on attributes of attitudes toward SPs and good practice of SPs. A statistically significant relationship between these attributes was observed amongst the HCWs in PMH. A polar opposite outcome was noted amongst HCWs in BPH. No significant associations were noted between the attributes knowledge, attitudes and practice of SPs amongst HCWs of this clinical area using Fisher Exact test.

The debate would not be complete if the level of education is not examined using a significance test. Mann-Whitney test was employed and focused on this attribute but in the context of qualification such as certificates, diploma, first degree and master degree. Significant differences in knowledge of SPs were noted between HCWs with certificate

qualifications and those with diplomas and first degrees and above qualifications. It was observed that HCWs with masters were more knowledgeable about SPs than those with lesser qualifications. HCWs in both hospitals with first degrees were also noted to have more knowledge of SPs than HCWs with diploma qualifications. A similar pattern was reported amongst HCWs with diploma and certificate qualifications. Associated with this discussion, are the different grades of HCWs. No significant difference in knowledge, attitude and practice of SP noted between GPs and RNs, RNs and HCAs and GPs and HCAs when the Mann-Whitney test was performed. However, significant difference in knowledge of SPs was noted between RNs and HCAs using Mann-Whitney test.

5.4 CONTRIBUTIONS OF THE STUDY TO THE DISCOURSE

Botswana is considered as one of the countries in the world with high incidence and prevalence of HIV and AIDS (WHO 2007:4). These rates are functions of a range of reasons with inconsistencies in adherence to SPs and infection control measures perceived to have major contributory roles to the same. Arguably, if SPs practices are not adhered to, the risk of acquisition or transmission of HIV, including other transmissible infections is expected to increase amongst HCWs as well as patients. Hence, adherence to SPs practice is critical for prevention or at least reduction in the rates of transmission of infections to HCWs and their patients. This is one of the very few studies that have explored adherence patterns of SPs practice from a broader perspective among HCWs in Botswana. Broader perspective in this context means that the study explored a range of variables that may influence adherence. Examples of these include educational level and grade or category of cadre of HCW. This study has therefore contributed immensely to the body of knowledge in infection control and SPs practices, which can be used by policy makers in Botswana to develop guideline to improve adherence patterns and practices of SPs. The study identified factors promoting and hindering adherence to SPs practices. These would be of critical utility in SPs practice policy development.

5.5 LIMITATIONS OF THE STUDY

Although this study adhered to ethical issues and best research practices in the context of application of methods, it is still expected to have some limitations, which are outlined below.

- The study employed a cross sectional design. This means data collection was carried out at one point in time ignoring the possible changes in views of respondents. Adopting a longitudinal approach to data collection would have enhanced insight into this area of study, as it may have allowed for more persistent views of respondents to be revealed.

- The study was carried out in the emergency departments of two hospitals. This means that data was collected only from HCWs of these departments. This may have an impact on the generasability of the study findings to wider populations of HCWs of other hospitals and respective departments. Even though this is the case, the study findings provide an indication of SPs practice in emergency departments of other hospitals. In other words, the study generated some insight into SPs practice and adherence and factors influencing this in emergency departments. The knowledge gained resulted in the researcher to offer some recommendations, which are believed would help improve SPs practices.

5.6 RECOMMENDATIONS

This section focuses on the provision of clear recommendations of issues which emerged from the findings and the research process.

It must be stated that attitude of HCWs towards SP is a important factor that can influence its practice. It was also revealed from the findings that attitudes towards SPs can be influenced or change by knowledge acquisition, as evidenced amongst HCWs of PMH. Acknowledging this, knowledge development through training with the view to promote adherence to SPs practice should be encouraged. Thus, HCWs of all hospitals should be offered the opportunity to attend courses or workshops on infection control and SPs. Added

to this, refresher courses on this subject should be offered on regular basis to ensure continuation of good practice. Consistent in the quality of training to be offered is also important, as this will ensure consistent implementation of SPs practice.

Limited resources or lack of these were other factors also observed from the findings to have a negative impact on SPs practice. A significant proportion of HCWs in PMH reported lack of resources as the primary reason for non-adherence to SPs practices. So, hospital managers need to ensure that HCWs are provided with the materials needed for SPs practice.

There was some indication of a lack of clarity of the infection control policies and SPs guidelines in the two studied hospitals. Lack of clarity of any quality assurance structure in clinical settings could contribute to poor practice as the issues contained in them may be interpreted.Misinterpretationsof clinical instructions can result in serious consequences. It is therefore important for policies and guidelines relating to this subject to be made clearer, written in simple language to enhance understanding.

In addition to the recommendations offered, this subject needs to be researched further to gain better insight into the same.

5.7 CONCLUDING REMARKS

This chapter has offered a summary of the study, including its limitations and recommendations for improvement in SPs practice and how to gain better insight into the subject area. In sum, the study has indicated that SPs practice is critical in the preventionof transmission infections or at least its reduction in clinical practice. In the main the practice of SPs and attitudes toward the same were not adequate amongst HCWs. This is probably because of the limitations noted in the infection control policies and SPs guidelines. Although available, these structures were noted to lack clarity in some places. Arguably, it is this limitation that may have contributed, at least in part, to the inconsistencies in SPs practice. The absence of essential materials to enhance SPs practice was also a contributor to the lack of consistency in adhering to this practice. This was in the main reported by HCWs in PMH as one of their reasons for not strictly following

SPs practices. Apart from these contributory factors, there was also a range of other factors reported to influence adherence to SPs practices, as evident in the study findings.

6 REFERENCES

Centers for Disease Control (CDC). 2007. *Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Health Care Settings*. From: http://www.cdc.gov/hicpac/2007IP/2007ip_part3.html (accessed on 05/07/2012)

Burns, N & Grove, SK. 2007.*Understanding nursing research: building evidence based practice.*4th Edition. Philadelphia, U.S.A: W. B. Saunders.

Burns, N & Grove, SK. 2008.*The practice of nursing research: appraisal, synthesis, and generation of evidence.* 6th Edition. St. Loius, U.S.A: Elsevier Saunders.

Chacko, J & Isaac, R. 2007.*Percutaneous injuries among medical interns and their knowledge & practice of post-exposure prophylaxis for HIV.Indian Journal of Public Health* 51(2):127-129

Clarke, L. 2004. The value of qualitative research.*Nursing Standard* 18(52): 41-44.

Conn, V, Hafdahl, A, Cooper, P, Brown, L & Lusk, S. 2009.Meta-analysis of workplace physical activity interventions.*American Journal of Preventative Medicine* 37:330-9.

Cormack, D. 2006. *Media reviews: the research process in nursing*. 4th Edition.Wiley-Blackwell.

Davis, P & Scott, A. 2007.Health research sampling methods.In, M. Saks and J. Allsop. (eds). *Researching health: qualitative, quantitative and mixed methods*. London: Sage. 155-173.

De Poy, E. &Gitlin, L.N. 1994 *Introduction to research: multiple strategies for health and human sciences*. London: Mosby.

De Vos, A.S.; Strydom, H.; Fouché, C.B. &Delport, C.S.L. 2011.*Research at Grass Roots: For the Social Sciences and Human Service Professions:* 4th edition*.* Pretoria: Van Schaik Publishers**.** 75

Grbich, C. 2007. *Qualitative data analysis: an introduction*. London: Sage.

Guba, E.G. 1990.*The alternative paradigm dialog*.In. E.G. Guba. (ed). The paradigm dialog. Newbury Park: Sage.

Hofstee, E. 2006.*Constructing a Good Dissertation: A Practical Guide to Finishing a Master's, MBA or PhD on Schedule*. Johannesburg, South Africa: EPE.

Hulley, SB, Cummings, SR, Browner, WS, Grady, DG & Newman, BT. 2007.*Designing clinical research.*3rd Edition*. USA,* Lippincott Williams & Wilkins:367.

MOH, Botswana. 2012. Department of HIV/AIDS prevention and care (DHAPC). *HIV and AIDS Statistics.* From: http://www.hiv.gov.bw/content/hiv-and-aids-statistics (accessed on 20/06/2011).

Johnson, B & Christensen, LB. 2010.*Educational research: quantitative, qualitative and mixed approaches*; 4th edition. California: Sage publications

Joubert, G & Ehrlich R (eds). 2007. *Study Design. Epidemiology: a research manual for South Africa.2nd edition*. Cape Town: Oxford University Press.

Joubert, G & Katzenellenbogen, J (eds). 2007. *Epidemiology: a research manual for South Africa*. 2nd edition. Cape Town: Oxford University press.

Kironde, S &Lukwango, J. 2009.Corporate response to the HIV/AIDS epidemic in Uganda – time for a paradigm shift?*African Health Sciences*2(3):127-135.

Karadag, M. 2010.Occupational exposure to blood and body fluids among a group of Turkish nursing and midwifery students during clinical practice training: frequency of needle stick and sharps injuries.Japan*. Journal of Nursing Science*7(2):129-35

Lincoln, Y.S. & Guba, E.G. 1985. *Naturalistic inquiry*. Beverley Hills, C.A: Sage. In De Vos, A.S.; Strydom, H.; Fouché, C.B. and Delport, C.S.L. 2005.*Research at grass roots for the social sciences and human service professions.*3rd edition. Pretoria: Van Schaik publishers. 79

Mehta, A, Rodrigues, C, Singhal, T, Lopes, N, D'Souza, N, Sathe, K, &Dastur, FD. 2010. Interventions to reduce needle stick injuries at a tertiary care center. *Indian J MedMicrobiol* 28:17-20

Macnee, CL & McCabe, S. 2008.*Understanding nursing research: Reading and using research in evidence-based practice*. 2nd Edition.Philadephia: Lippincott Williams and Wilkins.

Morse, J. 2002.A comment on comment.*Qualitative Health Research* 12:3-4.

Munhall, P & Oiler-Boyd, C. 1999.*Nursing research: a qualitative perspective.* 3rd Edition. New York, USA: Appleton.

Oxford Advanced Learner's Dictionary of Current English. 2005.7th edition. Oxford: Oxford University Press.

Parmeggiani, C, Abbate, R, Marinelli, P, Angelillo, IF. 2010.Health worker and health care-associated infections: knowledge, attitudes, and behaviour in emergency departments in Italy.*BioMedCentral10(35):1471-2334*

Patel, P, Davis, S, Tolle, M, Mabikwa, V, &Anabwani,G. 2011. *Prevalence of hepatitis B and hepatitis C co-infections in an adult HIV centre population in Gaborone, Botswana.* Am J Trop Med Hyg. 2011 Aug;85(2):390-4. From:

http://www.ncbi.nlm.nih.gov/pubmed?term=Prevalence%20of%20Hepatitis%20B%20and%20Hepatitis%20C%20Coinfections%20in%20an%20Adult%20HIV%20Centre%20Population%20in%20Gaborone%2C%20Botswana%20 (accessed on 16/05/2012).

Parahoo, K. 2006.*Nursing research, principles, process and issues*.2nd Edition. Basingstoke: Palgrave Macmillan.

Polit, DF & Beck, CT. 2004.*Nursing research: principles and methods* 7th. London: Lippincott Williams & Wilkins.

Polit, DF& Beck, CT. 2008.*Nursing research, generating and assessing evidence for nursing practice. 8th ed.*Philadelphia: Lippincott Williams and Wilkins.

Sadoh, WE, Fawole, AO, Sadoh, AE, Oladimeji, AO &Sotiloye, OS. 2006. Practice of Universal Precautions among Healthcare workers in Nigeria*. Journal of the National Medical Association* 96(5):722

Salehi, AS, &Garner, P. 2010. Occupational injury history and universal precautions awareness: a survey in Kabul hospital staff. *BioMedCentralInfectious Disease* 10(19):1471-2334

Siegel, JD, Rhinehart, E, Jackson, M, &Chiarello, L. 2007. The Healthcare Infection Control Practices Advisory Committee. 2007. *2007 Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings*.Fromhttp://www.cdc.gov/hicpac/pdf/isolation/Isolation2007.pdf (accessed on 14/09/11).

Silverman, D. 2004. *Qualitative research: theory, method and practice*.2nd Edition. U.K: Sage Publications.

Smith, MK. 1996. *'Action research', the encyclopaedia of informal education.*From:www.infed.org/research/b-actres.htm (accessed 26 June 2013).

Taylor, D. 2006. *The literature review: a few tips on conducting it. Writing in the Health Sciences: a comprehensive guide.*University of Toronto.

Taylor, SE, Peplau, LA & Sears, DO. 2003.*Social psychology*, Pearson Education International, New Jersey.

Uti, OG, Agbelusi, GA, Jeboda, SO &Ogunbodede, E. 2009.Infection control knowledge and practices related to HIV among Nigerian dentists*. Journal of Infection in Developing Countries* 3(8):604-610

WHO. 2007. *AIDS epidemic update*. Geneva.

Wiener, LS, Battles, HB & Wood, LV. 2007. A longitudinal study of adolescents with perinatally or transfusion acquired HIV infection: sexual knowledge, risk reduction self-efficacy and sexual behaviour. *AIDS Behaviour* 11: 471-478*.*

Wicker S, Jung J, Allwinn R, Gottschak R, and Rabenau H. 2008a*.* Prevalence of needle-stick injuries among health care workers in a German University Hospital*.Int Arch Occup Environ Health* 81(3):347-54

Wicker, S, Cinatl, J, Berger, A, Doerr, H, Gottschalk, R &Rabenau H. 2008b.Determination of Risk of Infection with Blood-borne Pathogens Following a NeedlestickInjury in Hospital Workers*.Ann. Occup. Hyg*. 52(7): 615-622.

Woodward, M. 2005. *Fundamental Issues. Epidemiology: Study Design and Data Analysis.* 2nd ed. Florida: Chapman and Hall/CRC.

APPENDIX

Annexure 1: Consent form

PARTICIPANT CONSENT FORM

I, ……, am an employee of ……..…….hospital, Gaborone, Botswana.

The study is about ***comparing adherence to standard precautions, with regard to infection control, amongst health care providers in public versus private hospitals in Gaborone.*** I have read this paper or it was read to me. When I agree to take part, I do understand the possible risks and benefits of the study. I know that I will not be rewarded for taking part in this exercise. I also know that I can withdraw from participating in the study at anytime and would not be affected in anyway by doing so. I have understood that my participation will be confidential and anonymous. By signing this paper I am voluntarily agreeing to take part in this research study.

Participant's Signature……. Date……..

Researcher's Signature ….. Date…….

Contact details – Dr N. Yilma
P.O.Box 4904, Main Mall,
Gaborone, Botswana

Witness's Signature……. Date…….

N.B.

-please don't write your name on the questionnaire to maintain anonymity

-possible risks in this study are minimal risks of feeling guilty / uncomfortable if theparticipant has not been adhering to Standard Precautions. Otherwise no major risks are expected.-possible benefits in this study are adding knowledge to society, mainly to healthcare workers to find ways of combating transmissible infections in health care settings

-you have two weeks to fill in and complete this questionnaire (from the 2nd of Nov to the 16th of Nov 2012). The researcher will be starting collection of the filled questionnaires on the 17t of Nov 2012.

Annexure 2: Data collection instrument (Self-administered questionnaire)

I-Demographic Data

Please tick or circle areas relevant to you

a-Sex

1-Male

2-Female

b-Age

1-15-24 years

2-25-34 years

3-35-44 years

4-45-54 years

5-55-64 years

c-Marital Status

1-Married

2-Co-habiting

3-Single

4-Divorced

5-Separated

6-Widowed

d-Highest Level of Education

1-Certificate

2-Diploma

3-First degree

4-Masters

5-PhD

e-Job Title

1-Specialist Doctor

2-General Doctor

3-Registered Nurse (RN)

4-Health Care Auxiliary (HCA)

f-How many hours of courses relevant to Standard Precautions did you attend the last 12 months?

…….Hours

g-If no courses relevant to Standard Precautions have been attended, please provide a reason(s):

……
……

……
……

II-Knowledge of Standard Precautions

Please tick or circle areas relevant to you

a-How do you scale your knowledge about Standard Precautions?

1-Very poor

2-Poor

3-Neutral

4-Adequate

5-Very adequate

b-How did you know about Standard Precautions?

1-At school

2-On job training

3-Others – specify ……..

c-Do you know that you can transmit Human Immune-Deficiency Virus (HIV), Hepatitis C Virus (HCV), Hepatitis B Virus (HBV) to a patient you are treating?

1-Yes

2-Not sure

3-No

d-Do you know that you can get Human Immune-Deficiency Virus (HIV), Hepatitis C Virus (HCV), Hepatitis B Virus (HBV) from a patient that you are treating?

1-Yes

2-Not sure

3-No

e-Have you received any educational course regarding Standard Precautions during the last 1 year of your practice?

1-Yes

2-Not sure

3-No

f-Does your health facility has a clear Infection Control policy?

1-Yes

2-Not sure

3-No

g-Does your health facility have clear Standard Precaution Guidelines?

1-Yes

2-Not sure

3-No

h- Which method is the best out of the following for disinfecting soiled linen, clothes, and instruments after use before they are used again?

1- Simple cleaning with water

2- Soaking in disinfection solutions

3- Sterilization

III-Attitude towards the Standard Precautions

Please indicate your own personal view/attitude towards Standard Precautions by ticking responses relevant to you

a-Standard Precautions are very important and necessary approaches in health care procedures

1-Strongly Disagree

2-Disagree

3-Neutral

4-Agree

5-Strongly Agree

b-You can acquire Human Immune-Deficiency Virus (HIV), Hepatitis C Virus (HCV), Hepatitis B Virus (HBV) infections if you don’t comply with Standard Precautions

1-Strongly Disagree

2-Disagree

3-Neutral

4-Agree

5-Strongly Agree

c- Which method do you think should be used to disinfect and treat soiled linen, clothes, instruments after use?

1- Cleaning with water

2- Soaking in disinfection solutions

3- Sterilization

4- Other method – state

……

……

……

……..

IV-Practice towards Standard Precautions

Please indicate your own practice towards Standard Precautions by ticking responses relevant to you

a-Whenever I am on duty in my station I strictly follow Standard Precaution Guidelines

1-Never

2-Rarely

3-Occasionally

4-Sometimes

5-Always

b-If not ALWAYS to the above question, why?

1-Lack of time

2-Lack of material

3-Emergency situation

4-Lack of knowledge

5-I forget

6-I don’t have the knowledge

7-I don’t believe in them

8-Others, state your reason/s

……
……
……
……

c-How many hours do you work in a week?

……..Hours

d-Do you wash your hands before attending to your patients/clients using soap and water?

1-Never

2-Rarely

3-Occasionally

4-Sometimes

5-Always

e- If your answer for the above question (d) is either of the 5 choices , give your reasons briefly

……
……

……
……

f-Do you wash your hands after attending to your patients/clients using soap and water?

1-Never

2-Rarely

3-Occasionally

4-Sometimes

5-Always

g-If your answer for the above question (f) is either one of the 5 choices , give your reasons briefly

……
……
……
……...

h-Do you use gloves when attending to a patient with blood or / and bodily fluids?

1-Never

2-Rarely

3-Occasionally

4-Sometimes

5-Always

i-If your answer for the above question (h) is either one of the 5 choices, give your reasons briefly

……
……
……
……..

j-Do you wash your hands before putting on gloves?

1-Never

2-Rarely

3-Occasionally

4-Sometimes

5-Always

k-If your answer for the above question (j) is either one of the 5 choices, give your reasons briefly

……
……
……
……..

l-Do you wash your hands after removing your gloves?

1-Never

2-Rarely

3-Occasionally

4-Sometimes

5-Always

m-If your answer for the above question (l) is either one of the 5 choices, give your reasons briefly

……
……
……
……..

n-Have you ever encountered Needle Stick and Sharp Injury in the last 1 year?

1-Yes

2-Not sure

3-No

o-If yes to above question (n), how many times within the last 1 year did you encounter NSSI?

1-once

2-twice

3-thrice

4-more than thrice

p-Do you recap used needles?

1-Never

2-Rarely

3-Occasionally

4-Sometimes

5-Always

q-If your answer for the above question (p) is either one of the 5 choices, give your reasons briefly

……
……
……
……..

r-Do you put on goggles when attending to an actively bleeding patient?

1-Never

2-Rarely

3-Occasionally

4-Sometimes

5-Always

s-If your answer for the above question (r) is either one of the 5 choices, give your reasons briefly

……
……
……
……..

t-Do you put on gowns when attending to an actively bleeding patient?

1-Never

2-Rarely

3-Occasionally

4-Sometimes

5-Always

u-If your answer for the above question (t) is either one of the 5 choices, give your reasons briefly

……
……
……
……..

v- Do you put on a mask when attending to an actively bleeding patient?

1-Never

2-Rarely

3-Occasionally

4-Sometimes

5-Always

w- If your answer for the above question (v) is either one of the 5 choices, give your reasons briefly

……
……
……
……..

x- How is soiled linen, clothes, instruments handled and treated after use in your facility before they are used again?

1- Simple cleaning with water

2- Soaking in disinfection solutions

3- Sterilization

Others – state
……
……

Annexure 3: Letter Requesting Permission to Conduct the Study

PERMANENT SECRETARY
MINSTRY OF HEALTH
REASERCH UNIT
P.O. BOX 0038
GABORONE
REPUBLIC OF BOTSWANA

RE: REQUEST TO CONDUCT A STUDY

I am a final year MA Health Studies student at the University of South Africa (UNISA) in Pretoria. I am required to complete a dissertation before obtaining the above mentioned qualification.

I intend to conduct a study on COMAPRING ADHERENCEPATTERNS TO STANDARD PRECAUTIONSWITH REGARD TO INFECTION CONTROL, AMONGST HEALTH CARE PROVIDERS IN PUBLIC VERSUS PRIVATE HOSPITALS IN GABORONE, BOTSWANA. The proposed study requires data collection using self-administered questionnairesfrom health professionals working in the Emergency Department of Bokamoso Private Hospital and Princess Marina Government Referral Hospital in Gaborone. The data collection will befrom the10thto the 24th of March 2012.

This is a comparative study that seeks to investigate the adherence patterns with SPs amongst Health Care Workers (HCWs) (specialist doctors, general doctors, nurses, health care auxiliaries)in the Emergency Departments in Princess Marina Government Referral Hospital (PMH) and Bokamoso Private Hospital (BPH). The findings can not only be used for the purpose of academic qualification but also to develop interventions to strengthen the Standard Precautions and Infection Prevention and Control measures in Botswana and abroad.

The issues of ethics have been critically considered and covered in the attached proposal in a detailed manner. All the information gathered from the health professionals will be

handled confidentially during study period and destroyed once the data analysis has been completed.

I am kindly requesting permission to conduct the study. I would like to point out that if I am granted permission the findings will be communicated to your office once the study is complete in a manner that will not identify participants.

Sincerely,

NebeyouAberraYilma (MD)

P.O. Box 4904, Main Mall Branch, Gaborone, Botswana,
Cell:+26771429704
Email: : nebyuabe@yahoo.com and/or 48201030@mylife.unisa.ac.za

Annexure 4: Time frame

Activities	Starting Date	Ending date
Questionnaire pretesting	15-Oct-2011	22-Oct-2011
Revising and finalizing the Questionnaire	22-Oct-2011	01-Nov-2011
Questionnaire distribution	02-Nov-2012	09-Nov-2012
Collection of filled Questionnaires	10-Nov-2012	17-Nov-2012
Data coding	18-Nov-2012	25-Nov-2012
Data entering	26-Nov-2012	03-Dec-2012
Data Analysis	04-Dec-2012	19-Dec-2012
Report Writing	20-Dec-2012	05-Jan-2012
Report Presentation	06-Jan-2012	06-Jan-2012
Final Research Report Submission to UNISA	25-Jan-2012	

Annexure 5: Budget

Item	Specific Item	Unit	Amount	Unit price	Total price
Stationery	Paper	Pack	2	P45	P90
	Pen	Number	2	P3	P6
	Pencil	Number	2	P3	P6
	Eraser	>>	1	P10	P10
	Printer Ink	>>	1	P150	P150
	Scientific Calculator	>>	1	P350	P350
	Clip Board	>>	1	P35	P35
	Ruler	>>	1	P20	P20
Computer	Samsung Computer	>>	1	P4500	P4500
Internet	Orange	Month	2	P440	P880
Software	SPSS 16.0	Number	1	P600	P600
Phone	Mobile Airtime	Month	2	P100	P200
Transport	Fuel	Lit	240Lit	P8	1920
Total					P8767